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Robert


THE AIRPORT INDUSTRIAL-BUSINESS PARK LOCATION STUDY

Planning and Development Department
Regional Municipality of Hamilton-Wentworth
September 1984



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SECTION 1 INTRODUCTION

PURPOSE

The purpose of this report is to assess the merits of alternative locations for an industrial-business park associated with Hamilton Civic Airport, in accordance with the requirements of an Ontario Municipal Board decision.

BACKGROUND

The Hamilton-Wentworth Official Plan was adopted by Regional Council on June 17, 1980 and substantially approved by the Minister of Housing on June 26, 1980. The Plan adopted by Council designated approximately 160 hectares (400 acres) of land for an airport-related industrial-business park. The park is located north of Dickenson Road and west of Highway 6 in the Township of Glanbrook, just north of Hamilton Civic Airport.

The designation of the Airport Industrial-Business Park was referred to the Ontario Municipal Board at the request of two area residents. On January 25, 1982 the Board deferred its decision for eighteen months to allow the Region to assess alternative locations, "with the view to providing a proper site for the new terminal and a related industrial park while minimizing or even eliminating impact on neighbouring residential development as much as possible". The deferral has since been extended twice at the request of the Region. It is currently due to expire October 1, 1984. A request for a further extension of the deferral has been made.

The Board accepted the desirability of an airport-related industrial park. Its deferral of the designation was based on the objectors' concerns about the location of the park and the loss of prime agricultural land. One of the objectors suggested that the park should be located south of Dickenson Road and east of Glancaster Road, in close proximity to the future terminal building. Neither objector questioned the principle of an airport-related industrial park in the area.

LOCATION

Map 1 shows the Regional Development Pattern in the Hamilton-Wentworth Official Plan, including the location of the Airport Industrial-Business Park proposed in 1980. Since all of the other designations in the vicinity of the airport were approved by the Minister of Housing, any alternative locations for the industrial-business park would require an Official Plan Amendment.

Map 2 shows the location of the airport in relation to other municipalities.

REPORT STRUCTURE

The report contains five sections in addition to this introduction. The second section reviews the current status of Hamilton Civic Airport, federal plans affecting the airport, and projections of future traffic. This review is necessary to establish the context for airport-related industrial development.

Section 3 assesses the potential for economic development in the vicinity of the airport by summarizing available information on airport-related industrial and commercial development and the experience at other similar Canadian airports.

Section 4 defines four alternative locations for an airport-related industrial-business park and evaluates them on the basis of a number of criteria.

Section 5 describes the recommended location for the industrial-business park.

Section 6 contains the recommendations resulting from the study.

SECTION 2

THE AIRPORT

HISTORY

Hamilton Airport was opened in 1940 as a combined military air field and training base. Its three runway triangular configuration was typical of military air fields of the period. The expansion currently under way is the first significant alteration from the original configuration.

The airport was initially licensed for civil aviation in 1947, following the establishment of the Hamilton Aero Club. The City of Hamilton applied for a public airport licence in 1952. The Aero Club was given a Class C International Charter licence in 1957, which resulted in customs facilities at the airport.

Ownership and control of the airport were transferred to Transport Canada in 1963, after the Department of National Defence declared the airport surplus to its needs. The City of Hamilton and Transport Canada have shared responsibility for the operation, maintenance and financing of the airport since 1967.

Nordair obtained permission in 1969 to provide domestic service between Hamilton and Montreal and transborder service between Hamilton and Pittsburgh. Nordair currently flies to Ottawa and Montreal four times a day, but has not had scheduled flights to Pittsburgh since 1982. The flights to Ottawa and Montreal attract a mixture of business and non-business passengers. Southwest Air has four scheduled flights between Hamilton and Windsor per day. This service is provided under a Class 3 licence, which means that the flight can be cancelled if there are no passengers. The Southwest Air service is aimed primarily at a business clientele.

Two airlines have announced plans to start transborder flights from Hamilton this fall. City Express will begin flights from Montreal and Ottawa to Hamilton and Pittsburgh on October 15th. Jet Stream International plans to begin flights from Hamilton to Erie and Pittsburgh on November 5th. Both airlines will offer connecting flights to other destinations in the United States.

No scheduled charter services are currently operating from the airport.

AIRPORT EXPANSION

In 1980 the Minister of Transport announced a major expansion of Hamilton Civic Airport, costing an estimated \$50 million. The expansion was planned for completion in 1988, but is running ahead of schedule.

Map 3 shows the expansion plans. The most important features of the expansion are:

1. a new 2,500 metre (8,000 foot) runway;
2. an expanded apron and taxiways;
3. a significantly enlarged terminal building;
4. expanded parking and relocation of the entrance;
5. new water and electrical services;
6. improved navigation and operating systems; and,
7. improved fire fighting facilities.

The land required for the expansion was acquired in 1983. Construction of the new apron and taxiway was completed in mid-1983. Construction of the new runway began in June 1983 and is scheduled for completion by the end of 1985, with work currently ahead of schedule. The design of the expanded terminal building is complete and construction has begun. The internal access road, parking lot improvements and the new fire hall are also under construction.

The Region extended a new watermain to the airport in 1983. A contract to construct the internal water distribution system also was awarded in 1983. An agreement has been reached with Ontario Hydro to relocate power lines and the work is now proceeding. A contract to install a new internal power supply was awarded in September 1983. The Region has scheduled the realignment of Butter Road to Airport Road for 1984, and the Ontario Ministry of Transportation and Communications has scheduled construction of the interchange at Highway 403 and Fiddlers Green Road for 1984/1985.

The airport expansion project is presently scheduled for completion by the end of 1985. All components are on schedule.

HAMILTON AIRPORT MASTER PLAN

Transport Canada is in the process of preparing a Master Plan for Hamilton Civic Airport. The Master Plan is intended to provide guidelines for future airport development to satisfy aviation demand in a manner compatible with environmental constraints, community development, other modes of transportation, and other airports. The general objectives of the Plan identified by Transport Canada staff in a June 20, 1984 status report are:

1. to foster an orderly pattern of growth for Hamilton Airport,
2. to assist other public agencies in co-operative planning,
3. to promote harmonious coexistence of the airport with surrounding communities and the natural environment,
4. to protect the investment of public funds;
5. to provide a source of information for further detailed study as it is required.

The original Hamilton Airport Master Plan Study was carried out from 1981-1982, on the basis of aviation forecasts prepared in 1979-1980. Transport Canada is preparing a revised plan to take account of more recent lower forecasts. Regional staff have reviewed a confidential preliminary draft of the Hamilton Airport Master Plan Summary Report prepared in July 1983. This draft has no official status and has been amended during the last year. The final version of the Master Plan will not be available to the Region until after Transport Canada's internal review process has concluded and the Minister of Transport has approved the plan.

Transport Canada has defined the role of Hamilton Airport as:

a Regional Airport designed and equipped with the services and facilities required to meet the natural demand of the Hamilton area for scheduled and non-scheduled movement of passengers and goods, and [that] caters to the needs of general aviation to the extent that the required services and facilities are available.

The airport is expected to serve the natural demand of the Hamilton area. The Hamilton Airport catchment area includes the cities of Hamilton, Guelph, Kitchener, St. Catharines and their surroundings, and the Niagara area. The assigned role of the airport is based on actual and projected use. The role of the airport could change in the future, depending upon the air lines that are attracted to serve it. The airport would have to have direct flights to international (non-U.S.) destinations to be classified as an international airport.

Transport Canada staff have advised Hamilton-Wentworth staff that the new runway is capable of handling virtually all types of aircraft, except for fully loaded jumbo jets flying to Europe. Jumbo jets to Europe could be accommodated from Hamilton if an intermediate stop for refuelling is made. The current forecasts for Hamilton Airport assume that the airlines favour an intermediate stop for economic reasons. Future improvements in aircraft performance and a growing preference for smaller aircraft by the airline industry may effectively remove any limitation of the new runway.

The Master Plan is predicated upon completion of the committed expansion program by 1988, which should be easily achieved, given the current status of the expansion. This expansion is expected to be sufficient to serve the forecast demand until the mid-1990s.

In general terms, the Master Plan indicates that a new terminal building should be built at a northern site when the existing terminal building (after expansion) has reached its useful life. The concept for future development of the airport is shown on Map 4. This concept was selected from among four alternatives for long range expansion evaluated by Transport Canada. Its primary advantages were ease of operations, absence of critical physical constraints, and flexibility for a further expansion if required. The operational advantages would result from the virtually complete separation of air carrier and general aviation activities, since general aviation would remain at the south end of the site and take over the existing terminal building. Transport Canada estimates that approximately 57 hectares of land would have to be acquired at the north end of the site to implement this concept. The northern passenger terminal would also include an area for an air cargo complex.

The timing of development at the northern site will depend on the rate of growth in air travel at the airport. As a result, the phasing of long range development at the airport is largely undefined and demand-dependent. The northern terminal is expected to be required sometime in the mid-1990s, but may be delayed until after 2000. Transport Canada will probably protect an area in the vicinity of the northern development site until the actual land requirements are known.

CENTRAL ONTARIO AVIATION AREA MASTER PLAN (COAAMP)

The purpose of the Central Ontario Aviation Area Master Plan is to identify the need for airside facilities and services to meet demand to the year 2000 in the designated area. The Central Ontario Aviation Area is bounded on the south by Lakes Ontario and Erie, on the north by the Muskoka Lakes, on the east by Trenton, and on the west by Kitchener-Waterloo. It includes Hamilton-Wentworth.

The COAAMP has been under development since 1980. A draft plan has been proposed and is undergoing internal review by Transport Canada staff. It will not be released for public comment until after the Minister of Transport has approved it.

The COAAMP is a higher level plan that sets the framework for airport planning at specific airports. However, the committed development program for Hamilton Civic Airport and the preparation of the Hamilton Airport Master Plan both preceded much of the work on the COAAMP, with the result that the COAAMP will recognize the planning and decisions already made. Hamilton Civic Airport is identified as a Regional Airport in the COAAMP, which is consistent with the Hamilton Airport Master Plan Summary Report cited earlier.

Transport Canada staff provided the following information at a meeting held on June 20, 1984 to advise Regional staff of the status of the COAAMP and the Hamilton Airport Master Plan:

- o Hamilton Civic Airport is the third largest airport in the Central Ontario Area in terms of annual volume of passengers, third in aircraft movements, and second in general aviation movements.
- o The COAAMP will be recommending an expansion of the Toronto Control Area. This will not adversely affect Hamilton Civic Airport.
- o Sub-performance aircraft are leaving Pearson International Airport and minimum performance aircraft are expected to leave in the near future. Some may come to Hamilton.
- o Maple Airport is expected to close in the future. Buttonville Airport is severely constrained.
- o Transport Canada has identified a need for more general aviation facilities in the Toronto area. Various alternatives will be considered, including Hamilton. Transport Canada is conducting a survey of general aviation users of Toronto area airports to determine where they would locate if their present location were not available. The survey should be helpful in assessing the potential for increased general aviation activity at Hamilton Civic Airport.
- o Hamilton Civic Airport is capable of handling international flights if airlines choose to offer them.

- o The COAAMP will not address major offloading of commercial air traffic from Pearson International Airport to Hamilton. However, it will examine the relationship between Hamilton and Pearson International Airport.

STATISTICS AND FORECASTS

Statistics Canada produces a number of publications that contain data on Canadian airports. Table 2.1 shows Hamilton Civic Airport's ranking in comparison to other Canadian airports on the basis of four factors: (1) the number of flights, (2) the number of revenue passengers, (3) the number of kilograms of mail (4) the number of kilograms of cargo. No ranking is given for airports not in the top 50 in a given year.

Table 2.2 is similar, but shows Hamilton Airport's percentage share of the Canadian total by category and year.

Table 2.1 indicates that Hamilton's ranking in terms of the number of flights and revenue passengers remained fairly steady from 1977 to 1980, but declined during the early 1980s. Table 2.2 indicates that Hamilton had less than a one per cent share of the Canadian total in all categories between 1977 and 1981.

These tables suggest that the current expansion could lead to an increase in Hamilton's share of Canadian airport activity.

TABLE 2.1

HAMILTON AIRPORT'S RANKING IN TOP 50 CANADIAN AIRPORTS BY CATEGORY AND YEAR

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
NUMBER OF FLIGHTS	32	32	31	31	39	Below 50
NUMBER OF REVENUE PASSENGERS	37	36	34	34	46	Below 50
KILOGRAMS OF MAIL	N.A.	Below 50	Below 50	Below 50	Below 50	Below 50
KILOGRAMS OF CARGO	50	50	47	Below 50	Below 50	Below 50

Source: Statistics Canada

TABLE 2.2

HAMILTON AIRPORT'S PERCENTAGE OF CANADIAN TOTAL BY CATEGORY AND YEAR

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
NUMBER OF FLIGHTS	0.6	0.6	0.6	0.6	0.4	N.A.
NUMBER OF REVENUE PASSENGERS	0.2	0.3	0.2	0.3	0.2	N.A.
KILOGRAMS OF MAIL	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
KILOGRAMS OF CARGO	0.1	0.1	0.1	N.A.	N.A.	N.A.

Source: Statistics Canada.

NOTE: These tables are based on data for scheduled international, mainline domestic, and international charter flights. Traffic at Hamilton Civic Airport may be slightly understated, because Canadian carriers that operate Class 2 and 3 services are not included in the survey (e.g., Southwest Air). Furthermore, no data is available for categories in which Hamilton Airport is not in the top 50 Canadian airports.

Tables 2.3 and 2.4 show Transport Canada's most recent forecasts of air passengers and air traffic movements at Hamilton Civic Airport. These forecasts, which were prepared in March 1984, supercede two previous sets of forecasts prepared in June 1983 and September 1980. The number of air passengers is projected to increase from 132,900 in 1980 to 220,000 by 1986 and 537,900 in 2000. Air traffic movements are projected to increase from 207,200 in 1980 to 221,300 by 1986 and 278,500 by 2000.

Transport Canada's 1980 and 1983 forecasts are framed in terms of high, medium and low estimates. The official forecast is the medium projection. The March 1984 forecasts are similar to the medium projections in the 1983 forecasts, except for slight reductions in a few categories towards the end of the forecasting period (1996 and 2000). The 1983 forecasts are significantly lower than the 1980 forecasts, reflecting nation-wide trends in the airline industry.

The 1980 forecasts were based on the following assumptions:

1. Airport facilities will be improved to allow operation of aircraft of all sizes and weights consistent with a 2,500 metre runway.
2. Navigational aids will allow aircraft to operate under the same conditions as at Pearson International Airport.
3. One or more carriers will operate at Hamilton Airport and will serve certain points in Western Canada in addition to points presently served in Eastern Canada.
4. Airport access will be improved through more frequent and more diversified limousine services and better signing in the area so that there will be no perceived difference between the convenience of access to Hamilton Airport and to Pearson International Airport for persons living at equal driving times from the two airports.
5. Canadian immigration/customs services will be provided to handle peak passenger loads at levels of convenience comparable to other mainline airports (but no U.S. pre-clearance).
6. Charter operations at Toronto International Airport will be approved in a manner that broadly follows the proportion of the number of trips made by people living in the respective catchment area of these two airports. The Hamilton Airport catchment area generates approximately 22 percent of the international and U.S. "sunspot" trips.

TABLE 2.3

AIR PASSENGER FORECASTS

FLIGHT SECTOR	ANNUAL ENPLANED / DEPLANED PASSENGERS (x 1,000)					
	1980	1986	1988	1991	1996	2000
DOMESTIC	116.8	184.0	235.0	308.0	344.0	377.0
TRANSBORDER	16.1	18.0	19.0	21.0	23.0	25.9
CHARTER	-	18.0	100.0	108.0	122.0	135.0
TOTAL	132.9	220.0	354.0	437.0	489.0	537.9

Source: Official CATA Forecasts (March 1984).

TABLE 2.4

AIR TRAFFIC MOVEMENTS

	ANNUAL AIRCRAFT MOVEMENTS (x 1,000)					
	1980	1986	1988	1991	1996	2000
AIR CARRIER	4.8	5.6	7.8	9.9	11.1	12.5
ITINERANT	61.0	61.7	65.6	71.9	80.0	87.0
LOCAL	141.4	154.0	158.3	165.0	173.0	179.0
TOTAL	207.2	221.3	231.7	246.8	264.1	278.5

Source: Official CATA Forecasts (March 1984).

It was assumed that carriers will be encouraged to operate charter flights to the U.S., to the Caribbean and Mexico and some charter flights to Europe from Hamilton Airport in 1986.

It was assumed that approximately 80% of the people living closer to Hamilton Airport could use that airport for transborder charter trips and 70% of these people could use Hamilton Airport for Southern charter trips. Similar percentages were assumed for 1991.

It was assumed that a few European charters would use Hamilton Airport, providing service for 10 percent of the people in Hamilton's natural catchment area. These flights would have to refuel at another stop in Eastern Canada in the eastbound direction due to the short runway.

The 1983 forecasts incorporate essentially the same assumptions as the 1980 forecasts, with the following additions and exceptions:

1. Improvements to airport facilities and access will be completed by 1986.
2. An overall decline in charter demand.
3. Reduced likelihood of split charter operations between Pearson and Hamilton Airports.

After revisions to the traffic projections, the service assumptions for air carriers in the 1983 forecasts were: (1) Western service introduced in 1986 with 5 weekly departures to Winnipeg/Calgary; (2) Western service increased in 1988 to 12 weekly departures to Winnipeg/Calgary; (3) Western service expanded to include Vancouver in 1991 (instead of mid-1980s forecast in 1980); (4) an increase in Eastern service compared to the current level; and, (5) transborder service to be maintained at the 1982 level of 6 departures weekly for 1985, 1988 and 1991. Whether these assumptions are realized will depend on the actual behaviour of the air carriers.

The 1983 forecasts for air cargo are the most recent available. They project a 20.3 per cent annual growth rate in enplaned and deplaned cargo between 1981 and 1991. The 1991 forecast is 610 tonnes.

Although the Region has not yet obtained a detailed explanation of the underlying assumptions for the March 1984 forecasts, it is reasonable to assume that they are similar to the assumptions used for the 1983 forecasts described above.

The analysis performed to generate the forecasts showed that the patronage of Hamilton Airport is highly dependent on flight frequency. A substantial proportion of air travellers who live closer to Hamilton Airport than Pearson International Airport still prefer to use Pearson International on routes offered at both airports, primarily because of the higher frequency of flights at Pearson.

The forecasts for Hamilton Civic Airport are highly sensitive to the air carriers' decisions concerning routes, scheduling and flight frequency. The forecasts also assume that Pickering Airport will not be built. The potential impact of the Minister of Transport's recently announced limited deregulation of the airline industry has not been incorporated in any of the forecasts. Transport Canada will again revise the forecasts to reflect deregulation and changes in other factors influencing projected traffic. The City Express and Jet Stream announcements may be the first indicators of industry response to deregulation as it affects Hamilton.

ACCESS TO THE AIRPORT

The success of an airport-related industrial-business park will depend on the level of activity at the airport itself, which will in turn be influenced by a number of factors, including accessibility. The convenience and speed of access to the airport will affect individual choices between Hamilton and Pearson International, and therefore the demand for air travel at Hamilton Airport.

Map 5 shows the principal existing airport access routes, long term road improvements, and future airport access routes. The map also shows several planned intersection improvements related to the expansion of the airport.

Short-term projects to improve access to the airport include the extension of Airport Road to Butter Road, the upgrading of Butter Road between the Airport Road extension and Fiddlers Green Road, and improvements to the intersection of Butter Road and Fiddlers Green Road. The estimated cost of these projects is \$1,125,000. The work was scheduled for completion in 1984, but the need to expropriate one remaining property could delay the start of the projects until 1985.

There are no plans to widen or reconstruct Airport Road. However, Hamilton-Wentworth plans to repave it between Homestead Drive and Glancaster Road and install a left turn lane for eastbound traffic turning into the new entrance to the airport in 1985.

The Ministry of Transportation and Communications is planning to construct a partial interchange at Highway 403 and Fiddlers Green Road that will allow traffic to enter and exit Highway 403 eastbound. This interchange will complement the Fiddlers Green/Butter/Airport Road link to the airport. The interchange would use the existing two lane bridge on Fiddlers Green Road crossing Highway 403. Its estimated cost is \$900,000. The M.T.C. had planned to build the interchange from 1984-1985, but the Ministry of the Environment is now considering raising the environmental assessment requirement from a Class B to a Class A report because of objections from the public. If this occurs, the project could be delayed 3-4 years, which would reduce the value of the new access route.

Minor improvements will be carried out at the intersections of Glancaster and Dickenson Roads and Dickenson Road and Highway 6 to compensate for the severance of Glancaster Road caused by the new runway.

Three major long term projects could greatly improve access to the airport: the new Highway 6 in the Nanticoke corridor, the completion of Highway 403 west between Ancaster and Brantford, and the Mountain East-West and North-South Transportation Corridor.

In response to requests from the Airport Manager and the City of Hamilton's Airport Sub-committee, the Hamilton-Wentworth Engineering Department prepared a brief for the Engineering Services Committee titled "Road Access to Hamilton Civic Airport - Existing and Proposed" in December 1983. This brief concluded that Fiddlers Green Road should be maintained as a two lane road and not upgraded to four lanes to accommodate airport traffic, and that the Nanticoke Highway Corridor to the Airport Road extension and an associated full interchange at Highway 403 are required as soon as possible to ensure an efficient and direct route to the airport. The Engineering Department is therefore viewing the Airport Road extension and the partial interchange at Highway 403 and Fiddlers Green Road as an interim solution to improve airport access. Although these projects will improve access to the airport compared to the existing situation, Fiddlers Green Road still has two important limitations. Firstly, it has restrictive vertical and horizontal curves. And secondly, it runs through a predominantly agricultural area, which means that farm equipment travelling along the road could slow down traffic to or from the airport.

The Ministry of Transportation and Communications has prepared terms of reference and hired a consultant to undertake a route alignment study of alternative routes for the Highway 6 Nanticoke Corridor between Highway 403 and the Caledonia Bypass. However, the study will not advance plans for construction of the new Highway 6 between Highway 403 and the airport. This section of road is not in the Ministry's capital budget and will be constructed only when demand warrants it.

The Engineering Department has estimated that the portion of the new Highway 6 corridor necessary to serve the airport would cost \$11.5 million, including \$3 million for the interchange.

The construction of Highway 403 west between Ancaster and Brantford is also not in the Ministry of Transportation and Communications five year program. Ministry staff have estimated that it is at least 10-15 years from being completed.

The Mountain East-West and North-South Transportation Corridor will be the subject of a hearing by the Consolidated Hearing Board, beginning in October 1984. This link between the Queen Elizabeth Way and Highway 403 would improve accessibility to the airport from the Niagara area.

CONCLUSIONS

- o Development of a northern terminal at the airport is expected in the mid-1990s, but may be delayed until after 2000.
- o The timing of the development of additional facilities at the airport will depend on demand.
- o Industrial or commercial development associated with the northern terminal is a long term proposition.
- o Hamilton-Wentworth should assess the Hamilton Airport Master Plan as soon as it is available and make appropriate recommendations to the Minister of Transport.
- o The Central Ontario Area Aviation Master Plan will mainly reflect the findings of the Hamilton Airport Master Plan in its treatment of the airport.
- o The airport expansion is on schedule and is expected to be completed by the end of 1985.
- o The airport expansion should lead to a significant increase in air traffic at Hamilton Airport between 1986 and 1988.
- o Forecasts of air traffic at Hamilton Airport are highly sensitive to air carrier decisions concerning flight frequency, routes and scheduling.
- o The impact of deregulation on future air traffic is unclear but is expected to be positive for Hamilton.
- o The most recent forecasts, which do not consider the effects of deregulation, suggest that air traffic at Hamilton Airport will increase more slowly than previously projected.
- o Accessibility will influence preferences for air traffic from Hamilton Civic Airport.
- o The extension of Airport Road to Butter Road, the upgrading of Butter Road, improvements to the intersection of Butter Road and Fiddlers Green Road, and the partial interchange at Fiddlers Green Road and Highway 403 should be viewed as an interim solution only, because of the limitations of Fiddlers Green Road.
- o Long term projects that promise significant improvements in airport accessibility include the new Highway 6 Nanticoke Corridor, Highway 403 between Ancaster and Brantford, and the Mountain East-West and North-South Transportation Corridor.

SECTION 3
ECONOMIC DEVELOPMENT NEAR AIRPORTS

The primary reason for the Airport Industrial-Business Park is to take advantage of the potential for economic development created by the airport. This chapter will classify the economic gains typically associated with airports and briefly describe the development near comparable Canadian airports. It will also discuss the function of an industrial-business park in appropriating these gains.

REGIONAL ECONOMIC GAINS FROM AIRPORTS

The benefits to a regional economy from an airport fall into five groups:

- o direct airport expenditures on goods and services;
- o direct airport employment;
- o gains to firms that use air transportation;
- o direct expenditures by travellers, particularly in the hospitality and travel industries; and,
- o multiplier effects.

DIRECT AIRPORT EXPENDITURES AND EMPLOYMENT

On-site employment at Hamilton Civic Airport was approximately 150 in July 1984, as shown in Table 3.1. The Hamilton Flying Club, Peninsulair and Airport operation and administration account for over 75 per cent of the full-time employment. The current expansion project provides another 35 construction jobs. Reliable forecasts of future on-site employment are not available.

TABLE 3.1
ON-SITE AIRPORT EMPLOYMENT IN JULY 1984

<u>EMPLOYER</u>	<u>FULL-TIME</u>	<u>PART-TIME</u>	<u>TOTAL</u>
Hamilton Flying Club	45	-	45
Peninsulair	30	20	50
Airport Administration	25	-	25
Air Traffic Control	17	-	17
Customs	2	-	2
Glanford Aviation	11	-	11
Canadian Warplane Heritage	4	5	9
447 Wing (R.C.A.F.A.)	6	-	6
Nordair	6	-	6
Works Department	4	-	4
Nick Fragis Restaurant	3	-	3
Total	153	25	178
Construction of Expansion	35	-	35

Source: Airport Manager.

No data on direct airport expenditures on goods and services in the regional economy are available. The amount spent should at least equal the annual operating expenditures for the airport, which were \$1,082,290 for 1983. This figure is clearly a low estimate, since it does not include expenditures by the Hamilton Flying Club, Nordair and other on-site organizations. Future expenditures will depend on the degree of expansion in air traffic.

The demand for land in an industrial-business park will not be significantly affected by the amount of direct airport employment.

Airport expenditures on goods and services may lead to some demand for land in the vicinity of the airport as a result of new firms starting up and existing firms relocating to reduce delivery times. The magnitude of this effect is unknown, but it is unlikely to be large.

USE OF AIR TRANSPORTATION BY INDUSTRY

Transport Canada published a detailed study of the economic impact of Pearson International Airport on industry and commerce in 1979 (The Economic Importance of Air Transportation in the Toronto Region: Present and Future).

The study identified twenty different reasons for the use of air transportation by industry, based on 44 interviews with senior managers of companies whose industries had been identified as major users of air transport. The results are shown in Table 3.2.

Three areas of concentration of firms that make heavy use of air transportation in the Toronto region were identified:

- o Downtown - finance
 - head offices
 - services to business
- o Don Valley - manufacturing, specializing in electronic and office machinery
- o Malton - manufacturing, often in combination with distribution and wholesaling
 - parts and service centres
 - services to business management

A fourth area of concentration was identified in Burlington. Firms in this area have strong linkages with the steel industry, but require ready access to Pearson International Airport. Burlington appears to represent a compromise location between Hamilton's industrial base and the airport.

These findings indicate that many firms that make heavy use of air transportation do not require a location in the immediate area of an airport.

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TABLE 3.2
AIR TRIP PURPOSES

Scheduled Air Passenger Services

1. Sales
 - o visits by executives to important clients
 - o sales managers supervising branch operations
 - o visits by customers/clients to the selling company.
2. Management
 - o visits by executives to branches
 - o top executives reporting to head office
 - o top management supervising branches in U.S. and abroad
 - o financial negotiations
 - o trips re major expansion.
3. Servicing Trips
4. Production Control (quality of own product)
5. Visits to Suppliers
6. Quality Control visits to suppliers
7. Technical Liaison and Training
8. Problem Solving Trips
9. Labour Negotiations.

Private Aircraft

1. Management
 - o visits to Toronto by senior U.S. executives of major companies
 - o more regular visits by presidents of small companies
 - o visits to remote plant locations
 - o reporting trips by management in remote locations
 - o trips re expansion, new plant location and development, especially to remote areas.
2. Sales
 - o visits by company chairmen and presidents to important clients
 - o transportation of important customers
3. Production Control
4. Delivery of parts and components often in emergencies.
5. Delivery of special packets and letters, (e.g., contract bids).

Air Cargo

1. Emergency Deliveries
 - o spare parts
 - o components
 - o products.
2. Regular transportation of valuable products (value more than approximately \$25 per lb.)
3. Delivery of perishables.
4. Newspapers.
5. Mail.
6. Delivery of samples and promotional literature.

Industries that are heavy users of air transportation make an average of about 11 times as many trips per employee as do industries that are light users. Transport Canada has identified the following industries as heavy users of air transport in the Toronto region:

- o extractive industries, including metal mines and petroleum industries. (Executives travel from head office to production locations.)
- o manufacturing firms with external affiliations (firms with branches, head offices or affiliated firms external to the region).
- o wholesalers of machinery and metal products, along with wholesaling related to exports and imports and distribution at a national scale.
- o the wholesaling and distribution functions of major department and chain stores.
- o the communications and utilities industries.
- o the investment and money management divisions of the finance and insurance industries.
- o real estate developers and builders.
- o services to business management and miscellaneous services.
- o labour organizations and trade associations.
- o amusement and recreation, including motion picture workers and travel by sports teams.
- o the policy and planning levels of government, particularly at the federal and provincial levels.

Approximately 41 percent of 1971 employment in the Toronto region was in these industries.

Transport Canada also identified airport-oriented growth industries in the Malton zone, which were defined as industries that had been increasing employment in the Malton zone and that had been spending more than average on air travel. This exercise demonstrated that some industries that normally are light users of air transportation become heavy users when they are located near the airport. Some individual firms in certain industries therefore appear to have a cost function that favours air transportation, despite the below average use of air transportation by the industry as a whole.

Table 3.3 shows the airport-oriented growth industries in the Malton zone. It differs from the above list of heavy air transport users in the Toronto region because it excludes heavy air transport users not located in the Malton zone and includes industries that are heavy users only in the Malton zone. However, airport-oriented growth industries in Hamilton-Wentworth will not necessarily be the same as those in Toronto, so Table 3.3 should be treated as an indicator only.

External linkages clearly are a key factor affecting the demand for air travel by industry. A study of economic linkages of firms in the Toronto region found a strong correlation between employment in industries with external affiliations and the volume of business air travel.

Hamilton-Wentworth has 8 head offices of public corporations with branches or subsidiaries in other provinces, the United States, or the United Kingdom. The Region also has 22 branches and 19 subsidiaries of public corporations with head offices outside Ontario. The number of private corporations with head offices, branches or subsidiaries in Hamilton-Wentworth is not known.

Industries in Hamilton-Wentworth that fall into the categories defined by Transport Canada as heavy users of air transportation or as airport-oriented growth industries in the Malton zone were identified using the Region's industrial information system. Both groups include over 50 percent of total 1982 employment in Hamilton-Wentworth. This suggests that significant latent demand for air transportation may exist, assuming that the potential demand by Hamilton-Wentworth firms is reasonably similar to the existing demand by Toronto firms in the same industries.

If industries with potential demand for air transportation are located in Hamilton-Wentworth, the regional economy could be expected to benefit from improved air service in the following ways:

- o lower costs for existing industry, to the extent that firms prefer to substitute air transportation for other forms of transportation.
- o expansion of existing firms.
- o establishment of new firms to provide air-related services (e.g., airplane maintenance, food for travellers).
- o prevention of relocation by existing firms requiring better air service.
- o some displacement of expenditures in the Toronto area from firms now using Pearson International Airport that are able to switch some or all of their air travel to Hamilton.

TABLE 3.3

AIRPORT-ORIENTED GROWTH INDUSTRIES
IN THE MALTON ZONE

INDUSTRY

Food and Beverage Industries
Rubber Products Industries
Plastic Fabricating Industries
Textile Industries
Clothing Industries
Printing, Publishing, and Allied Industries
Primary Metal Industries
Metal Fabricating Industries
Machinery Industries
Transportation Equipment Industries
Electrical Products Industries
Non-Metallic Products Industries
Petroleum and Coal Products Industries
Chemicals and Chemical Products Industries
Miscellaneous Manufacturing Industries
Transportation
Trade
Services to Business Management
Miscellaneous Services

Source: Adapted from Transport Canada, The Importance of Air
Transportation in the Toronto Region: Present and Future, 1979.

Improved air service may also attract some firms to Hamilton-Wentworth that would otherwise have located elsewhere, although the available literature suggests that air transportation is a relatively minor factor in locational decisions for most industries.

The use of more air transportation by industry therefore is likely to stimulate the regional economy in a number of ways, most of which will not affect the demand for industrial land near the airport. The main source of potential demand for airport-related industrial land will be airport-oriented growth industries. The number and type of these industries are impossible to determine accurately.

EXPENDITURES BY TRAVELLERS

The primary beneficiaries of expenditures by air travellers are the travel, hospitality (accommodation, food, entertainment) and ground transportation industries. Land use planners usually consider these to be commercial uses.

Air travellers are normally either business people or tourists. Transport Canada has found that business people tend to have shorter stays than tourists but spend about twice as much per day. Two-thirds of the business people stay in hotels. As a result, they probably spend more on food. Tourists are more likely to stay with friends, but spend proportionately more than business people on amusement and recreation. Transport Canada estimated that the average expenditure per business trip to Toronto in 1979 was \$235 and the average expenditure per non-business trip was \$185.

Table 3.5 below shows commercial uses associated with airports. These uses require highway exposure on routes between the airport and key destination points in the urban area. Highway 6 in Glanbrook and the Upper James corridor in Hamilton (south of Limeridge Road) are potential locations for this type of development.

TABLE 3.5

AIRPORT-RELATED COMMERCIAL USES

- Hotels and motels
- Convention and exposition centres
- Restaurants and catering establishments
- Automobile rental and leasing
- Automobile servicing
- Gas stations
- Taxi terminals
- Recreational establishments, such as night clubs
- Banks

Source: Adapted from Environment Canada, Stress On Land, 1983.

Population-serving commercial uses such as retail trade and many service industries are usually not considered airport-related. The travel industry also does not require a location near the airport. Off-site travel agents tend to be relatively dispersed. Land use policies should therefore ensure that commercial uses in an industrial-business park associated with the airport are airport-related.

MULTIPLIER EFFECT

The direct airport-related expenditures and employment discussed in this chapter generate multiplier effects throughout the regional economy. Two elements of the multiplier effect are generally recognized: indirect and induced effects.

Indirect effects consist of the expenditures by all industries supplying inputs to airport-related economic activities (e.g., direct airport expenditures on goods and services and employment, expenditures on factor inputs by airport-related industries, and expenditures by travellers). Induced effects consist of additional expenditures on goods and services by those who receive income from airport-related economic activity directly or indirectly.

The exact size of the multiplier is extremely difficult to determine. Estimates of the multiplier effect in other areas usually fall in the 1.5-3.0 range. The multiplier for the Hamilton-Wentworth economy is probably somewhat lower than most estimates found in a literature review because of leakages to other regions.

The multiplier effect will increase the economic benefits of airport-related development, but should only have a marginal influence on demand for land in an industrial-business park near the airport. Its size is therefore of little concern for the purposes of this study.

DEVELOPMENT NEAR OTHER AIRPORTS

The Planning and Development Department requested information on the extent of industrial and commercial development near other airports from a sample of Canadian municipalities. Most of these airports currently have air traffic volumes similar to those projected for Hamilton Civic Airport in the 1991-2001 period, as Table 3.6 shows. Although it varied in quality, this information was useful in attempting to identify consistent patterns of airport-related industrial and commercial development.

TABLE 3.6

TRAFFIC VOLUMES IN SAMPLE OF CANADIAN AIRPORTS

<u>Airport</u>	<u>1981 Revenue Passengers (Thousands)</u>
Hamilton	85.8
Quebec	549.1
Regina	609.4
Thunder Bay	422.8
Victoria	594.6
Ottawa	1972
Oshawa	-
Windsor	296.6
London	237.2

Source: Transport Canada.

London

The London Official Plan designates a large industrial area adjacent to the airport. This is one of two large industrial areas designated in the London Plan.

There are at least 32 industrial firms in separate buildings in the industrial area near the airport. Some have a significant office component. The largest firm is the General Motors Diesel Division, which employs 2,500 people. It appears to have been a catalyst for other development. The key industries are transportation equipment, metal fabricating, petroleum products and food manufacturing. There is virtually no industrial development abutting the airport.

There is some highway commercial development near the airport, consisting of several automobile sales and service establishments, a motel, a hotel and a plaza.

Quebec City

The nearest industrial park is located approximately 6.5 kilometres (4 miles) west of the airport.

The park has excellent access to the airport via Autoroute No. 40 and No. 440. It also has access to a Canadian National rail line.

The park has 28 establishments and is approximately one third developed. It contains medium to heavy industrial uses, with manufacturing predominating. Major firms include Alcan Canada, Hewitt Equipment Limited, Armco Canada and Canadian General Electric.

Regina

The Regina Airport is on the western edge of the major built-up area of Regina. Industrial and commercial development in proximity to the airport is not encouraged, pending a Transport Canada review of airport expansion, and because of concern over ice fog problems if such development were permitted.

The major industrial area in Regina is the Ross Industrial Park in the northeast corner of the City. A review of the census tracts adjacent to the airport in Regina indicated that they were predominantly residential and did not appear to contain significant airport-related industrial and commercial uses.

Thunder Bay

The Thunder Bay Airport is located in a built-up portion of the City.

The Beaverhall Industrial Park is a fully serviced light industrial park located immediately east of the Airport. There are 43 establishments in the park and the adjacent highway commercial area on Arthur Street. Approximately one third of them are industrial. Major uses include heavy equipment sales and service, bottling companies, automobile service and rental agencies, restaurants and hotels.

Another smaller light industrial area south of the airport is largely vacant. The existing uses include a scrap metal yard, a lumber company, a building contractor's storage yard, a motorcycle repair and sale shop, and a roofing company. Storage is important to most of these uses.

Victoria

There are two industrial areas near Victoria International Airport. The North Saanich industrial area contains 7.1 acres adjacent to the airport property. Approximately half the area is developed for industrial use (4 establishments). The absorption rate has been 1/4 acre per year for the last ten years. The area is adjacent to the "Northeast Reserve" in the 1983 draft Master Plan for Victoria International Airport. The Northeast Reserve is intended for groundside commercial uses. It is also the proposed location for Dynatech Industries. The 1983 Industrial Land Analysis prepared by the Capital Regional District Planning Department suggests that the area may have research or high technology potential because of existing uses and the proposed Dynatech development.

The Sidney industrial area contains 54 acres within 4 miles of the airport. Forty-eight per cent of the land is presently used for industrial purposes, but the net supply available for industrial development is estimated to be only 18 acres. The absorption rate is 2 1/4 acres per year. Nine of the nineteen establishments are warehousing or related uses.

The 1983 Industrial Land Analysis states that Sidney and North Saanich individually have limited amounts of industrial land available, but if combined with the land that may be available at the airport they have potential for developing a significant joint industrial area.

Ottawa

The Ottawa International Airport is about 11 kilometres due south of the city centre in the Ottawa-Carleton Region.

Access to the Airport is provided by the Sawmill Creek Parkway, supplemented by McCarthy Road. The site is located in two municipalities. The North Field or general aviation area and part of the Canadian Forces Base are within the limits of the City of Ottawa, while the larger remaining area containing the main terminal buildings and major runways lies within the City of Gloucester.

There is no major industrial park near the airport. However, an analysis of the traffic zones in and adjacent to the airport identified 62 establishments with approximately 1,420 full-time employees. Over half of these establishments are located on airport property, including airlines, aviation-related commercial enterprises, and federal government facilities such as Canadian Armed Forces hangars and a National Research Council laboratory and wind tunnel.

The predominant off-site uses (i.e., adjacent to the airport) are contractors, building construction, storage, and motor vehicle service and repair.

Windsor

Windsor Airport is located in the north-westerly corner of the Township of Sandwich South in the County of Essex. It abuts the City of Windsor on its northern and western sides and the Township of Sandwich South on its southern and eastern sides.

The City of Windsor has provided a reference plan showing the Walker Farm (Airport) Industrial Park. The park contains approximately 100 hectares (250 acres). It incorporates an access road to the general aviation area of the airport. The zoning for the park permits any manufacturing or industrial use, with a few exceptions such as slaughterhouses, leather tanneries, iron and steel mills, and outdoor storage of certain materials.

No major industrial area abuts the airport in the Township of Sandwich South. The developed area on the opposite side of County Road No. 42 from the airport property contains 14 establishments. The principal industries are storage, construction and building materials. There are 3 highway commercial establishments, including automotive sales and parts and a drive-in theatre.

Oshawa

Oshawa Airport is on the western edge of the built-up area in the southern half of the city.

There are no existing airport-related industrial areas either on or off site. The Official Plan designates some land northwest of the airport for industrial purposes. Oshawa has also carried out a Master Planning Study for its airport. The Plan includes an industrial park with direct access to an apron at the north end of the airport property. The original plan for this development had approximately 25 lots intended primarily for commercial aviation-related and light industrial uses. Two lots were also designated for a corporate and research office centre. Most of the lots were 1-3 acres in area. About one third had direct access to the apron. The industrial park plan has since been revised and is currently the subject of confidential negotiations with the federal government.

These case studies demonstrate that the amount of airport-related industrial and commercial development in the vicinity of smaller Canadian airports is quite variable. The findings generally confirm the earlier discussion in this section. This suggests that an incremental approach to the designation of land for airport-related development would be appropriate.

CONCLUSIONS

- o The benefits to a regional economy from an airport fall into five main groups:
 - 1. direct airport expenditures on goods and services;
 - 2. direct airport employment;
 - 3. gains to firms that use air transportation;
 - 4. direct expenditures by travellers; and,
 - 5. multiplier effects.
- o Firms use air travel for a wide variety of purposes.
- o Many firms that make heavy use of air transportation do not require a location in the immediate vicinity of an airport.
- o Certain firms in industries that are normally light users of air transportation may become heavy users when they are located near an airport.
- o External linkages are a key factor affecting the demand for air travel by industry.
- o If the potential demand for air transportation by Hamilton-Wentworth firms is reasonably similar to the existing demand by Toronto firms in the same industries, there may be significant latent demand for air transportation in Hamilton-Wentworth.
- o Improved air service may attract some firms to Hamilton-Wentworth but this effect is likely to be small because air transportation is a relatively minor factor in the locational decisions of most firms.
- o Most benefits to the regional economy from improved air transportation will not affect the demand for industrial land near the airport.
- o The major source of potential demand for airport-related industrial land will be airport-oriented growth industries. The demand created by these industries is extremely difficult to estimate.
- o The primary beneficiaries of expenditures by air travellers are the travel, hospitality and transportation industries.

- o Airport-related commercial uses usually require highway exposure on routes between the airport and key urban destination points.
- o If an industrial-business park is located on appropriate routes, it could accommodate airport-related commercial uses.
- o Multiplier effects are not expected to affect the demand for land in an airport-related industrial-business park significantly.
- o The amount and type of industrial and commercial development in the vicinity of other comparable Canadian airports are highly variable.

SECTION 4
EVALUATION OF ALTERNATIVES

DESCRIPTION OF ALTERNATIVES

Map 6 shows the four alternative locations for the Airport Industrial-Business Park selected for detailed evaluation.

These alternatives were chosen from over 80 initially generated. They were selected on the basis of the following criteria:

- o proximity to the airport
- o opportunity for differentiation of airport-related development from development in other industrial-business parks
- o availability of servicing in reasonable proximity
- o highway exposure for airport-related commercial development
- o amount of agricultural land lost
- o minimization of the number of abutting residences
- o compatibility with the Mount Hope Special Land Use Plan prepared by the Township of Glanbrook.
- o the proposed designation in the Hamilton-Wentworth Official Plan.

Alternative 1 is a linear corridor on the west side of Highway 6 extending from the City of Hamilton boundary southerly almost to Airport Road. It includes the northwest quadrant of Mount Hope, which would be fully serviced for airport-related industrial and commercial development.

Alternative 2 is essentially the same as the proposed designation in the Hamilton-Wentworth Official Plan, except that the easterly boundary of the industrial-business park is Highway 6, instead of the curved line shown in the Plan, and limited development in Mount Hope is recognized. Development in Mount Hope would be serviced by the existing watermain only.

Alternative 3 retains the same general location proposed in the Hamilton-Wentworth Official Plan north of Dickenson Road, but reduces its size considerably by excluding the westerly portion of the proposed designation. It also includes fully serviced development at the northwest corner of Homestead and Airport Roads in the northwest quadrant of Mount Hope abutting the airport.

Alternative 4 is an attempt to take advantage of the conceptual proposal for a future terminal building on the north side of the airport contained in the Hamilton Airport Master Plan Summary Report discussed in Section 2. It consists of a large site south of Dickenson Road and west of the current airport boundary.

Table 4.1 below shows the area of each alternative.

TABLE 4.1
AREA OF ALTERNATIVES

	HECTARES	ACRES
ALTERNATIVE 1	270	670
ALTERNATIVE 2	324	800
ALTERNATIVE 3	248	625
ALTERNATIVE 4	133	330

Map 7 shows the existing property fabric and land use in a large area surrounding the airport. Maps 8-11 provide information on the relationship between each of the alternatives and existing land uses.

OBJECTIVES OF EVALUATION

The evaluation of the four alternative locations for the Airport Industrial-Business Park is based on a number of objectives:

1. To maximize the probability of development (and therefore maximize employment).
2. To maximize the potential for airport-related firms.
3. To minimize loss of development from other industrial-business parks.
4. To maximize the net financial benefit to municipal government.
5. To minimize the loss of agricultural land.
6. To minimize adverse impacts on the rural community and character, particularly with respect to existing residential development.
7. To ensure that proposed new industrial and commercial development is as compatible as possible with present planning commitments.

CRITERIA FOR EVALUATION

The key criteria selected for the evaluation of alternatives were:

1. The potential (need and opportunity) for airport-related development.
2. Servicing requirements and costs.
3. The impact on existing residences abutting the proposed development.
4. The amount of producing agricultural land lost.
5. The degree of compatibility with previous Council decisions.

This section discusses the alternatives in terms of these criteria. Several possible constraints to development are also discussed.

These are clearly not the only possible criteria for evaluation. They were chosen because they are consistent with the objectives established for the development and because they permit differentiation among the alternatives. For example, access to major transportation routes is a significant factor affecting the success of industrial areas, but it is not included as a criterion because access is similar for all alternatives.

POTENTIAL FOR AIRPORT-RELATED DEVELOPMENT

Industrial Development

It is essential that the Airport Industrial-Business Park be adequately differentiated from other industrial-business parks with good access to the airport. If this differentiation is not achieved, development in the Airport Industrial-Business Park will replace development that would have occurred in other parks, resulting in no net gain to the Hamilton-Wentworth economy.

Three principal types of location can relate industrial development to the airport:

1. Locations physically separate from the airport but with good road access to it.
2. Locations on or abutting the airport with direct internal road access to airside terminals and facilities.
3. Locations on or abutting the airport with direct taxiway access.

Table 4.2 shows travel times between the airport and industrial-business parks designated in the Hamilton-Wentworth Official Plan and the Central Business District. The North Glanbrook, Mountain, Ancaster, Allarco, and Clappison's Corners Industrial-Business Parks are all within a 30 minute drive of the airport now and will be within a 25 minute drive after planned road improvements. Firms transporting goods by air would gain relatively little from a location in an industrial-business park closer to the airport, because a relatively large proportion of the time in short-haul trips is taken up by loading and unloading trucks.

Table 4.3 shows the amount of vacant developable land in the five industrial-business parks with good road access to the airport. Over 80 per cent of the land in these parks is undeveloped. More than 1000 hectares of vacant developable land are available. Almost 300 hectares of this vacant land are already fully serviced.

There is therefore no economic rationale for the designation of a substantial amount of additional industrial land on the basis that it has good road access to the airport. The main effect of such a designation would be to spread a similar amount of industrial development over a larger amount of land in more industrial-business parks. The rate of development of all the industrial-business parks would decrease. An industrial designation in the vicinity of the airport is therefore best justified on the basis of either direct internal road access between the industrial development and the airport (e.g., Windsor plan) or on the basis of direct taxiway access (e.g., Oshawa plan).

TABLE 4.2

TRAVEL TIMES FROM HAMILTON AIRPORT TO INDUSTRIAL-BUSINESS PARKS

INDUSTRIAL-BUSINESS PARK OR CBD	EXISTING ROAD SYSTEM		FUTURE ROAD SYSTEM	
	CLOSEST POINT	FURTHEST POINT	CLOSEST POINT	FURTHEST POINT
1. Ancaster Industrial Park	15 min.	18 min.	10 min.	13 min.
2. Allarco	17	20	12	14
3. Hamilton Mountain/North Glanbrook	10	16	10	16
4. Stoney Creek	34	42	26	34
5. Clappison's Corners	29	30	22	23
6. Central Business District	19		19	

Source: Hamilton-Wentworth Planning and Development Department.

TABLE 4.3

VACANT LAND IN INDUSTRIAL-BUSINESS PARKS
WITH GOOD ROAD ACCESS TO THE AIRPORT
(IN HECTARES)

	MOUNTAIN INDUSTRIAL	NORTH GLANBROOK	DUFF'S CORNERS	ALLARCO	CLAPPISON'S CORNERS	TOTAL
TOTAL AREA	282	403	264	103	249	1,301
VACANT DEVELOPABLE LAND ¹ :						
FULLY SERVICED	124	-	175	-	-	299
PARTIALLY SERVICED	53	309	-	9	90	461
NON- SERVICED	16	58	42	92	82	290
TOTAL VACANT DEVELOPABLE LAND	193	367	217	101	172	1,050

¹ Vacant Developable Land includes properties with no buildings, vacant properties with mobile trailers or temporary structures, and large lots with farm buildings. Large residential lots are excluded.

Source: Hamilton-Wentworth Planning and Development Department.

Transport Canada generally does not support taxiway access for developments outside the airport site because of the need to maintain adequate security around the perimeter of the airport. It would also create competition for any on-site industrial development being marketed by Transport Canada. Furthermore, the high cost of constructing a suitable taxiway would reduce the attractiveness of such a development concept to investors.

Transport Canada has advised the Planning and Development Department that it has prepared a plan for a 14 hectare on-site industrial development containing 10 lots with direct taxiway access. This plan is currently being evaluated internally by Transport Canada staff to determine whether all or part of the development would be financially feasible. The proposed development would be located southwest of the terminal building.

A small amount of on-site development is also possible east of the terminal building. A potential lessee is evaluating the merits of that site.

In the longer term, additional opportunities for on-site industrial development with direct taxiway access may arise in association with the northern terminal proposed in the Hamilton Airport Master Plan.

Industrial development with direct taxiway access appears to be best treated as an on-airport activity. Marketing support from Hamilton-Wentworth would probably increase the likelihood of such development.

Direct internal road access between industrial development and the airport offers the best opportunity for airport-related industrial development with a competitive advantage over existing industrial-business parks that have good access by normal public roads. This form of development would allow firms to transfer products directly to an airplane by means of an airport loading vehicle, which would eliminate the need for trucking.

The most advantageous location for industrial development with internal road access would be the area north of Airport Road between Homestead Drive and the airport in Mount Hope, particularly if the industries are oriented to general aviation. This location minimizes the length of road required. Three of the four alternatives include this area, and two of these three (Alternatives 1 and 3) specify full servicing for it. Transport Canada staff have indicated their support for this development concept.

Alternative 4 would offer an excellent opportunity to develop an industrial area with direct internal road access to air carrier and cargo handling operations, if the proposed northern terminal is constructed. Transport Canada staff have indicated a strong preference for a separation of commercial air traffic (at the north end) from general aviation activity (at the south end) for operational reasons. The achievement of this objective is clearly dependent upon the construction of the northern terminal and the conversion of the new expanded terminal at the south end to general aviation purposes exclusively. If this operational separation occurs, there may be potential for airport-related industrial development with direct internal road access at both northern and southern locations (i.e., Alternative 4 and the northwest quadrant of Mount Hope in Alternatives 1 and 3). However, such development in the northwest quadrant of Mount Hope could become less attractive in the future, as a result of possible declines in general aviation activity and competition from an on-site industrial development operated by Transport Canada.

Commercial Development

The main requirement for airport-related commercial development is prominent exposure on major roads linking the airport and key destination points in the urban area (refer to Table 3.5 for specific airport-related commercial uses).

The Homestead Drive and Highway 6 corridor is clearly the preferred location for airport-related commercial uses, since it links the airport and Hamilton. Airport Road between the entrance to the airport and Homestead Drive may also have some potential for commercial development.

SERVICES

Map 12 shows existing and committed services in the vicinity of the airport. The key features are:

- o A 16 inch watermain extending south on Highway 6 and Homestead Drive from the City of Hamilton and west on Airport Road to the airport entrance. This watermain is not adequate to service the industrial-business park development on the west side of Highway 6 in Mount Hope shown in Alternatives 1 and 3. However, some development could be accommodated before looping of the watermain is required.
- o Trunk sanitary and storm sewers between Upper Wellington and Upper James (part of the Red Hill Creek Trunk Sewer system) and south on Upper James approximately to Malton Drive.
- o A sewage pumping station at the northwest corner of Highway 6 and Twenty Road. This pumping station is expandable.
- o A forcemain connecting the sewage pumping station to the gravity sewer beginning at Malton Drive.
- o A gravity sewer along Highway 6 from the Mountain Transit Centre to the pumping station. This sewer is currently a private drain.

Map 13 shows the external services required for each of the four alternatives, based on information supplied by the Hamilton-Wentworth Engineering Department.

Alternative 1 would require a second watermain between Rymal Road and Airport Road to provide the necessary fire flows to support industrial and commercial development in Mount Hope. It would also require that connections to the private drain between the Mountain Transit Centre and the pumping station at Highway 6 and Twenty Road be permitted. A pumping station in Mount Hope will be needed, along with a combined forcemain and gravity sewer to connect the new pumping station to the gravity sewer terminating at the Mountain Transit Centre.

The watermain and sanitary sewers are shown running through the industrial block south of the Mountain Transit Centre rather than along Highway 6 and Homestead Drive. The purpose of this alignment is to minimize pressures for strip development on the east side of Highway 6 and Homestead Drive that would intrude on good agricultural land and detract from the development of the Airport Industrial-Business Park. However, an alignment along Highway 6 and Homestead Drive may be preferable in order to service existing residences fronting on Highway 6 and Homestead Drive. A decision on the exact alignment of the services can be deferred.

Detailed engineering analysis would be required to determine whether the properties fronting on the north side of Airport Road could be serviced by gravity to the pumping station.

The servicing of development in the northwest quadrant of Mount Hope would probably result in pressure to service the rest of the village. This would require an additional pumping station in the southwest quadrant.

Alternative 2 would require a second watermain on Highway 6 between Rymal Road and Dickenson Road. It would also require a watermain on Dickenson Road between Highway 6 and Glancaster Road. This alternative provides for only limited development in Mount Hope, based on the existing watermain. No additional external sewer construction would be required.

Alternative 3 would require the same external works as Alternative 1. However, the alignment of the watermain and sewers has been shown along Highway 6 and Homestead Drive, because the golf course was excluded from this development concept. It therefore would have the disadvantage of creating pressure for strip development on the east side of Highway 6.

Alternative 4 would require a second watermain on Highway 6 between Rymal Road and Dickenson Road. A watermain on Dickenson Road between Highway 6 and Glancaster Road would also be needed. Connections to the Mountain Transit Centre private drain would be necessary. The gravity sewer would have to be extended south from the Mountain Transit Centre to Dickenson Road and west on Dickenson Road to the first industrial subdivision street.

Table 4.4 below shows the capital costs of providing services for each alternative. The calculations are based on the following cost estimates provided by the Engineering Department:

1. The capital cost of a pumping station is approximately \$750,000.
2. The cost of a watermain is approximately \$325. per metre (\$100 per foot).
3. The cost of a forcemain also is approximately \$325. per metre (\$100 per foot).
4. The cost of a gravity sewer is approximately \$490. per metre (\$150 per foot).

Operating costs are not included in the table. The Engineering Department estimates that the annual operating cost of a pumping station is approximately \$10,000.

The internal servicing of industrial subdivisions in Hamilton-Wentworth is usually financed under the provisions of the Local Improvement Act. The Engineering Department has estimated the municipal share of these costs at approximately \$50,000 per hectare for all hard services, including storm sewers and roads. Area municipalities are responsible for the municipal share of storm sewer costs financed as local improvements. The internal servicing costs are shown in Table 4.4.

All cost estimates in Table 4.4 should be treated as preliminary estimates only. A detailed evaluation by the Engineering Department will be required to determine actual costs.

TABLE 4.4
MUNICIPAL SHARE OF
SERVICING COSTS FOR AIRPORT INDUSTRIAL-BUSINESS PARK ALTERNATIVES
(Thousands of Dollars)

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
WATERMAIN	\$ 1,760	\$ 1,820	\$ 1,760	\$1,820
SANITARY SEWERS				
- FORCEMAIN	180	-	180	-
- GRAVITY	775	-	775	1,000
PUMPING STATION	750	-	750	750
INTERNAL SERVICING	13,500	15,310*	12,400	6,650
TOTAL	\$16,965	\$17,130	\$15,865	\$10,220
AVERAGE COST PER HECTARE	\$ 63	\$ 58**	\$ 64	\$ 77

* An estimate of \$40,000. per hectare was used to calculate the internal servicing costs for the Mount Hope version of Alternative 2, since sanitary sewers would not be provided.

** Average cost per hectare is calculated for the northern, fully serviced portion only. If the Mount Hope area is included in the calculation the average cost per hectare drops to \$53,000.

Alternative 4 is the least expensive to service by a wide margin over the next best alternative, primarily because the total area involved is much smaller and it does not include Mount Hope. However, Alternative 2 is less expensive than any of the other alternatives when evaluated on an average cost basis.

In addition to the costs listed in Table 4.4, Alternatives 2,3 and 4 would require improvements to Dickenson Road at an estimated cost of \$700,000.

RESIDENTIAL IMPACT

All of the alternatives affect residential uses. Table 4.5 below shows the number of residential properties that either directly abut or are included in each alternative.

TABLE 4.5

RESIDENTIAL PROPERTIES IN AIRPORT INDUSTRIAL-BUSINESS PARK ALTERNATIVES

	NUMBER OF PROPERTIES*
ALTERNATIVE 1	125
ALTERNATIVE 2	112
ALTERNATIVE 3	110
ALTERNATIVE 4	53

* Does not include farm houses.

A significant number of residential properties would be affected by industrial development, regardless of the alternative selected. Alternative 4 includes fewer than half the residential properties affected by the next lowest alternative, primarily because it is the only alternative that does not include part of Mount Hope. The area bounded by the airport property, the golf course, Highway 6/Homestead Drive and Airport Road contains 53 residential properties. Eliminating this area from Alternatives 1,2 and 3 would reduce the impact on existing residences, but would also reduce the potential for directly airport-related development.

Eighteen properties at the southeast corner of Twenty Road and Highway 6 are separated from potential industrial or commercial development by roads and an Ontario Hydro corridor. These properties are included in the tabulations for Alternatives 1,2 and 3 shown in Table 4.5, but are less likely to experience severe land use conflicts than abutting residences.

Residential properties on the opposite side of a road from a potential development area are not included in Table 4.5, but would nevertheless experience some impacts from industrial or commercial development.

The Ontario Municipal Board decision deferring the designation of the Airport Industrial-Business Park directed the Region to study alternative locations to the one proposed in the Official Plan "with a view to providing a proper site for the new terminal and a related industrial park while minimizing or even eliminating impact on neighbouring residential development as much as possible."

The main adverse impacts of large industrial and commercial areas on adjacent residential uses are noise from industrial operations, commercial activities and truck traffic, visual intrusion, increased car and truck traffic, increased storm water runoff to nearby watercourses, air pollution, and a change in the rural or village character of the area. An airport-related industrial park could also lead to an increase in the number of flights, which would result in more airplane noise.

The policy options available to ameliorate these impacts are to:

- o Move the Airport Industrial-Business Park to a location where few residences are affected, which is what the Board suggested in its decision.
- o Acquire residential properties in or abutting the park.
- o Drastically reduce the size of the park.
- o Zone residential properties in industrial-business parks as non-conforming uses.
- o Implement protective measures, such as berming, buffering, landscaping, internal road systems and storm water retention ponds, through conditions of draft approval for plans of subdivision, subdivision agreements, zoning by-laws and site plan control.

Finding another location for an industrial-business park near the airport with minimal impacts on residences is problematic because of the large number of rural residences in the area. Such a location would probably disrupt agricultural production in an area not presently subject to development pressure, or would be costly to service, or would not be adjacent to the airport, which would prevent direct access between industrial uses and the airport. Most sites would have a combination of these disadvantages.

The acquisition of residential properties to facilitate industrial development is not financially feasible. Residential land is almost always worth more than industrial land. As a result, it would not be economical for either a private developer or Hamilton-Wentworth to acquire large numbers of residences. Transport Canada is not interested in acquiring residential properties that are not needed for operational purposes.

A drastic reduction in the size of the park from those of the alternatives proposed in this report clearly would reduce the number of residences affected. However, the potential for industrial and commercial development might also be constrained (on the supply side). A tradeoff between impacts on residents and the provision of sufficient land for airport-related industrial and commercial development is therefore necessary. All four alternatives make this tradeoff in favour of the provision of ample land for development, on the assumption that adequate protective measures could be implemented.

The usual purpose of zoning properties as non-conforming uses is to encourage the relocation or cessation of the use in the long run. Such an approach is impractical in this case, because of the substantial capital investments in residences by individual property owners. Conversion of most existing properties to industrial use would entail severe capital losses for the present owners. This report assumes that all plans for the Airport Industrial-Business Park will recognize existing residences as legitimate long term uses.

The land use controls available under the Planning Act would enable Glanbrook and Hamilton-Wentworth to minimize the impacts of industrial or commercial development near residential properties, but not eliminate them. Noise from operations and visual intrusions can be minimized through landscaping, berming and buffering requirements, which can be imposed on all new development by means of an appropriate combination of conditions of draft approval for plans of subdivisions, subdivision agreements, zoning by-laws and site plan control. Noise and disturbance from car and truck traffic can be minimized by incorporating internal road systems in plans of subdivision. Air pollution can be minimized by using Official Plan policies and zoning by-law provisions to restrict the uses permitted. Increases in storm water runoff can be minimized by requiring storm water retention ponds or equivalent measures as part of the subdivision approval process.

People who are sensitive to noise may be expected to choose residences away from the airport. A 1972 study of residential property values near Pearson International Airport by R.W. Crowley found that values dropped immediately after an expansion in airport activity, but subsequently regained and surpassed their former levels. He explained this finding by suggesting that noise sensitive individuals moved away from the airport and were gradually replaced by people less sensitive to noise. If this effect holds for the area around Hamilton Airport, the noise impact of an industrial-business park may be relatively inconsequential in comparison with the impact of aircraft noise.

AGRICULTURAL IMPACT

Maps 14 and 15 show the soil capability for agriculture according to the Canada Land Inventory and existing agricultural systems according to a land use survey by the Ontario Ministry of Agriculture and Food carried out during 1982 and 1983.

Most of Alternative 1 is 60% Class 1 land and 40% Class 3 land with some topographic limitations. It also contains a few pockets of pure Class 1 land. The Existing Agricultural Systems map indicates that substantial areas are used for recreational purposes or have been idle for more than five years. The remainder of the area contains hay, grain and mixed systems and continuous row crops.

Alternatives 2 and 3 are also predominantly Class 1 and 3 land. Both include small areas of Class 2 land near their western boundaries north of Dickenson Road. The bulk of the area north of Dickenson Road is farmed as either a grain or a hay system for both alternatives. The village portion of these alternatives contains areas of hay, grain, and mixed systems and continuous row crops.

Alternative 4 contains significant amounts of Class 1,2 and 3 soil. It is used for a combination of hay and grain systems, with a substantial block of land that has remained idle for over five years.

Table 4.6 shows the amount of land currently in use for agricultural purposes that would be removed from production by each of the alternatives. The table is based on Map 7, Existing Land Use and Property Fabric, which has been field checked by Hamilton-Wentworth staff at the property level.

TABLE 4.6

LAND REMOVED FROM AGRICULTURAL USE BY ALTERNATIVES

	HECTARES
ALTERNATIVE 1	110
ALTERNATIVE 2	265
ALTERNATIVE 3	153
ALTERNATIVE 4	95

The Ontario government's Food Land Guidelines define policies for preserving agricultural land. Section 4C.5 of the guidelines, which deals with the growth of urban centres, includes the following policies:

3. Where agricultural capability of lands surrounding a center varies, growth is to be encouraged onto poorer lands.
4. Subject to Section 1.5, while consideration must be given to the logical extension of existing communities, the underlying principle is that the better food lands be retained. Where better lands are not retained for agricultural use, the need of this land for other purposes must be justified, and documented as outlined in Chapter 3.
5. Where urban growth trends indicate the continued absorption of prime food lands, possibilities for increasing densities or redirecting part of the growth to communities situated on lower capability food lands should be studied.

All of the land affected by the alternatives has good capability for agriculture (Class 1,2 and 3 soil). However, Table 4.6 indicates that Alternatives 4 and 1 are clearly superior to Alternatives 2 and 3 in preserving currently producing agricultural land.

The Ministry of Agriculture and Food has reviewed the four alternatives. According to a letter of August 2, 1984 the Ministry prefers Alternative 1 for two reasons:

1. Fragmentation has occurred extensively in this area. The agricultural viability has been diminished.

2. The intrusion of the proposed industrial site into the agricultural area is the least.*

AREA MUNICIPAL OFFICIAL PLANS

Map 16 shows the existing land use designations in the Hamilton and Ancaster Official Plans and the proposed designations in the Glanbrook Official Plan.

Glanbrook Official Plan

Although all of the alternatives are in the Township of Glanbrook, none is entirely consistent with the Township's proposed new Official Plan. The Plan was approved in principle for circulation by the Glanbrook Council on February 22, 1984.

Schedule A, Land Use Plan, of the proposed Official Plan designates a large Urban Industrial-Business Park in the northwest quadrant of Dickenson Road and Highway 6. The Urban Industrial-Business Park designation also includes a small parcel at the southwest corner of Dickenson Road and Highway 6. This park is similar to the one shown in the Hamilton-Wentworth Official Plan (see Map 1), except that it extends to Highway 6 at its eastern edge and the western boundary is curved through a lot that was entirely included in the Hamilton-Wentworth Official Plan designation. The northern sections of Alternatives 2 and 3 are similar to the area designated in the Glanbrook Plan, except that Alternative 3 excludes over 50 hectares on the western edge.

The Glanbrook Plan designates an area north of Twenty Road on both sides of Highway 6 as Highway Commercial (and hazard land on the west side). Section 3.3.7 of the Plan contains a specific policy applicable to the northwest quadrant:

The lands located on the west side of Highway No. 6 and north of Twenty Road West possessing a total area of approximately 35 hectares are to be developed primarily as a hotel/motel complex. The permitted uses on the subject lands may include overnight accommodation, meeting rooms, restaurants, specialty service shops (e.g., gift shops, newstands, hair stylists, etc.), outdoor and indoor recreational facilities and automotive uses (e.g., automobile service stations, parking, rental agencies, etc.).

The area in the northwest corner of Dickenson Road and Highway 6 is included in Alternative 1, but not in any of the other alternatives. The proposed uses are consistent with airport-related commercial development. The area is well-located for airport-related commercial development because it abuts the major transportation route between the airport and Hamilton's central business district.

* Alternative 4 included the village area when it was circulated to the Ministry of Agriculture and Food, which meant that it contained more agricultural land than Alternative 1. The change in the alternative does not affect the Ministry's position.

The proposed Highway Commercial designation on the east side of Highway 6 north of Twenty Road is not included in any of the alternatives. Whether this area is designated Highway Commercial is of relatively little significance for the purpose of this study.

Schedule B, Mount Hope Village Settlement Area, designates most of the northwest quadrant of the village adjacent to the airport as Village Industrial. The frontage along the west side of Homestead Drive north of Airport Road is designated as Village Commercial. Section 3.1.4.2 of the Plan requires that new development in Mount Hope proceed on the basis of a municipal water supply and private sewage disposal systems. Section 3.1.4.5 states that the intent of the Plan is that a secondary plan be prepared and approved for Mount Hope, but that development of a limited nature be considered in advance of a secondary plan, subject to certain conditions.

Section 3.1.4.23 and 3.1.4.24 of the proposed Plan specify the uses permitted in the Village Industrial designation: warehousing, wholesaling, light industrial, retail warehousing, recreational, public utilities and ancillary residential uses. Section 3.1.4.14 specifies the uses permitted in the Village Commercial designations: retail, service commercial, automobile sales and service, business services, recreational and entertainment facilities, restaurants, taverns, hotels, motels, public buildings, institutional uses, auditoriums, clubs and parking lots. The intent of the Plan is to encourage the redevelopment of existing residential uses in the Village Industrial and Village Commercial designations for industrial and commercial purposes.

Alternative 2 is consistent with the treatment of Mount Hope in the proposed Plan. The Industrial-Business Park designation would include the northwest quadrant of the village, but industrial and commercial development would occur on the basis of private sewage disposal systems. Alternatives 1 and 3 designate the same area for fully serviced development, which would mean the extension of both sanitary sewers and a second watermain to Mount Hope. Alternative 4 does not provide for an Industrial-Business Park designation for any part of Mount Hope.

The proposed Glanbrook Official Plan contains several other statements relevant to airport-related development. Section 1.5.3, one of the assumptions underlying the Plan, states:

There will be escalated pressures for development, especially industrial and commercial development in proximity to the Hamilton Civic Airport in the Mount Hope area, industrial development in the North Glanbrook Industrial Park, and residential and related development in the Binbrook Urban Settlement Area.

Sections 2.2.6 and 2.4.4 state that two of Council's general goals and objectives are:

To encourage major industrial development to locate in the North Glanbrook Industrial Park and in proximity and association with the Airport, offering comprehensive development on municipal services and minimizing potential land use conflicts.

To encourage expansion of the Hamilton Civic Airport and ancillary industrial and commercial development on the lands adjacent to the Airport.

Section 6.6.1 and 6.6.3 in the part of the Plan dealing with the airport state that:

It shall be the policy of the Council to support the expansion (1982-85) of the Hamilton Civic Airport.

It shall be the intent of this Plan to encourage new airport-related industrial and commercial development and redevelopment in the appropriate areas in the vicinity of the Airport as designated on Schedule 'A' - Land Use Plan.

These policies tend to support the village portions of Alternatives 1 and 3, since fully serviced land is significantly more likely to attract airport-related industrial and commercial development.

Hamilton Official Plan

Council decisions concerning the Upper James Corridor in Hamilton (south of Limeridge Road) have resulted in the preparation of Amendment No. 22 to the Hamilton Official Plan and Amendment No. 11 to the Hamilton-Wentworth Official Plan. The purpose of these amendments is to revise the staging provisions in both Plans to permit development of the Upper James Corridor. Amendment No. 22 was adopted by the Hamilton Council on September 25, 1984. Amendment No. 11 was adopted by Hamilton-Wentworth Council on October 2, 1984.

The process leading to the adoption of these amendments was initiated by the City of Hamilton's Special Committee on Jobs, which passed the following resolution on February 25, 1983:

That the Special Committee on Jobs request the Regional Engineering Services Committee, Planning and Development Committee, Regional Planning Committee and Economic Development Committee to review their respective policies concerning the phasing-in of services on the mountain with a view to re-aligning the program to accommodate known existing pressure from private sector developers and to accommodate the effect on development the Airport Expansion Project will have.

The Planning and Development Department subsequently prepared a study design in accordance with the Hamilton Council's direction. As part of this overall study Council authorized the hiring of the firm Miller, O'Dell and Paul, Dr. M. Webber of McMaster University, and Mr. E. Suichies in October 1983 to undertake a commercial market analysis of the Upper James - South Mountain Study Area. The Commercial Market Analysis - Upper James South Mountain Study was submitted by the consultants in April 1984. The main findings of the study were:

- o 4000m² of DSTM, food and personal services, 17 food and beverage establishments and five automotive establishments will be required by the year 2001;
- o no significant DSTM, food and personal service facilities are required until after 1995; however, some food and beverage and automotive establishments could be developed earlier;

- o earlier or more extensive commercial development along the Upper James corridor would detrimentally affect the continued viability of existing facilities;
- o no significant commercial development will be generated by airport activity and expansion; and,
- o based on the commercial space needs projected by this study, amendments to the City and Regional Official Plan are not required.

After a public meeting to hear comments on the Commercial Market Analysis, the Hamilton Planning and Development Committee decided on May 30, 1984 to proceed with an amendment to the Hamilton Official Plan to allow immediate development of the Upper James corridor, and also requested a similar amendment to the Hamilton-Wentworth Official Plan.

On May 1, 1984 Hamilton-Wentworth Council authorized the Engineering Department to call tenders to construct the Red Hill Creek Trunk Sewer South Branch between Upper Wellington and Upper James Streets. Both sanitary and storm sewers are being constructed, with completion expected in 1984. The north branch of the Red Hill Creek Trunk Sewer is expected to be constructed in 1987-1988. Regional Council awarded a contract for the construction of storm and sanitary sewers on Upper James Street from Malton Drive to approximately 455 metres north of Rymal Road on July 17, 1984.

These commitments to servicing create opportunities for airport-related commercial development along Upper James in Hamilton and Highway 6 in Glanbrook. The key issues are the amount and location of commercial development, since an industrial-business park along Highway 6 in Glanbrook could compete with Upper James Street in Hamilton for the airport-related commercial development available. Alternatives 1, 2 and 3 all include development fronting on the west side of Highway 6. If one of these locations is selected, some airport-related commercial development in the industrial-business park can be expected along Highway 6. Alternative 4 would be less likely to attract airport-related commercial development.

The total amount of airport-related commercial development that might be attracted to the Upper James - Highway 6 corridor is unknown. Although the Commercial Market Analysis minimizes the potential for such development, it acknowledges the difficulty of projection. For example, Section 5, which addresses the commercial impact of the airport, states that, "The additional commercial demand associated with airport operations is not a well documented phenomenon..." and "it is difficult to determine the correlation between economic development and airport activity". The model used to generate space requirements did not include airport-related demand. Sections 2 and 3 of this report demonstrate that the level of airport-related commercial activity will depend on the future growth of air travel at Hamilton Airport, which is highly uncertain. The problem of predicting requirements for airport-related

commercial land is compounded by related land uses to be permitted in the area. Commercial establishments along the Upper James portion of the corridor could be population-serving (i.e., oriented to residential uses) or general highway commercial, rather than specifically airport-related. The industrial-business park along Highway 6 in Glanbrook could be expected to attract industrial as well as airport-related commercial uses, depending upon the provisions of the applicable development plan. Furthermore, some types of airport-related commercial establishments could be located in other parts of the urban area (e.g., the travel industry, downtown hotels).

The area designated for commercial use on Upper James will not be known until Hamilton City Council has approved the appropriate neighbourhood plans. This is not expected to occur until at least early 1985. Assuming that sufficient commercial area is designated on Upper James, and if Alternative 1,2 or 3 is selected for the Airport Industrial-Business Park, then it is probable that some airport-related commercial uses will choose to locate along Upper James and some will choose to locate in the Airport Industrial-Business Park. There is no compelling reason to interfere with this market-driven process.

However, commercial uses in the Airport Industrial-Business Park should be airport-related, to ensure that population-serving commercial uses do not occupy land intended for industrial use.

Ancaster Official Plan

Alternatives 1, 2 and 3 have negligible effects on land use designations in the part of Ancaster adjacent to the airport.

If adopted, Alternative 4 could result in development pressure on the predominantly agricultural area in Ancaster on the west side of Glanaster Road.

CONSTRAINTS

Environmental

There are no designated Environmentally Sensitive Areas in any of the alternatives, according to Map No. 4 of the Hamilton-Wentworth Official Plan.

Schedule D, Environmental Plan, of the proposed Glanbrook Official Plan identifies an area of Class 1 forest cover near the western edge of Alternative 2. If Alternative 2 is selected, a development plan for the Airport Industrial-Business Park should address the treatment of this area. The Niagara Peninsula Conservation Authority has recommended the retention of as much of the existing tree cover as possible.

The Conservation Authority has also indicated that its main concern with all of the alternatives is that the storm water generated from the development is satisfactorily addressed.

Map 17 shows hazard lands and watercourses. The Conservation Authority will require that the regulatory flood levels along Twenty Mile Creek be recognized in the layout of development patterns and the design of individual developments. Although this affects Alternatives 1,2 and 3, the northwest corner of Twenty Road and Highway 6 in Alternative 1 is the most severely affected area.

The Authority also requires that the drainage channels of Three Mile Creek and other tributaries of Twenty Mile Creek be properly accommodated in any development plans. Proposals to modify these channels will require approval under the Authority's "Fill, Construction and Alteration to Waterways Regulation."

Access to Highway 6

The Ministry of Transportation and Communications has provided the following information concerning restrictions on access to Highway 6 in a letter of July 25, 1984:

Highway 6 generally between Hamilton and Nanticoke is categorized as a Class III Provincial Highway, and is outranked only by Freeways/Expressways (Class I) and, staged Freeways/Expressways (Class II) in terms of traffic function. A Class III facility such as Highway 6 carries substantial volumes of through traffic, and has/should have, in most part, limited direct land access.

To ensure that adequate "Access" control is achieved as a means of protecting the viability of the Highway from additional strip development and hence a deterioration in the level of service, the Ministry determined a number of years ago that all highways categorized as Class III will have a "Special Controlled Access Highway designation (S.C.A.H.).

The "restrictions" that will be imposed/exercised by the S.C.A.H. designation are generalized as follows:

ACCESS

Private: All existing entrances will be allowed to remain. No new entrances will be permitted except:

- a) existing entrances may be upgraded to serve a commercial/institutional use where the property was so zoned prior to the date of the designation;

The letter continues to state that a development of significant size can be accommodated under these restrictions.

These restrictions should be recognized in development plans for the Airport Industrial-Business Park.

Airport Zoning

Transport Canada applies a system of zoning to airports to ensure that development does not create operational problems or hazardous conditions for air traffic.

Map 18 shows Transport Canada's airport zoning. The three primary zones outside airport property are termed the approach surface, the transitional surface and the outer surface. The restrictiveness of each zone decreases with distance from the airport.

Map 18 also shows a 10 metre building line interpolated by Planning and Development Department staff. The purpose of the line is to indicate the approximate area within which a building less than 10 metres in height would be required, which would limit the potential for industrial development. Table 4.7 below indicates the area inside this line for each of the alternatives. Both the 10 metre line shown on Map 18 and Table 4.7 should be treated as estimates only. Precise limitations on building height will be determined by Transport Canada on the basis of individual applications for development.

TABLE 4.7

APPROXIMATE AREA INSIDE 10 METRE LINE
(IN HECTARES)

	HECTARES
ALTERNATIVE 1	30
ALTERNATIVE 2	18
ALTERNATIVE 3	18
ALTERNATIVE 4	0

ADVANTAGES AND DISADVANTAGES OF ALTERNATIVES

The purpose of this section is to summarize the principal advantages and disadvantages of each of the alternatives under consideration.

Alternative 1

Advantages

- o good opportunity for airport-related industrial development with direct internal road access to the airport (northwest quadrant of Mount Hope)
- o good opportunity for airport-related commercial development along the west side of Highway 6

- b) one residential/farm entrance may be granted for each vacant ownership created prior to the date of the designation. In lieu of the residential farm entrance, one commercial/industrial/institutional entrance may be permitted where safety criteria can be met, but only for those lands which were zoned for the proposed use prior to the date of designation;
- c) auxiliary/field entrance may be granted;
- d) infilling may be considered within established communities or hamlets.

Road Entrances:

All existing road access will be allowed to remain and consideration will be given to:

- i) The opening of original township road allowances or roads in lieu thereof at locations approved by the Regional Director.
- ii) Public road access, at intervals compatible with the design of the highway for Registered Plans of Subdivision and other development plans approved by this Ministry with a minimum spacing of 355m (1200 feet).
- iii) Private roads where a public road system is not practical or feasible, e.g. - municipal land fill sites, Provincial Parks, small pockets of development, etc.

Special Exemptions: as approved by the Regional Director.

REMARKS

The purpose of this criteria is to ensure adequate "Access" control to protect the viability of the highway from additional strip development by restricting further direct access.

BUILDING SETBACKS

To be minimum of 31m (101 feet) from the right-of-way limit if frontage roads are anticipated; if frontage roads are not needed, the setback may be reduced to a minimum of 14m (45 feet).

- o favoured by the Ministry of Agriculture and Food because it minimizes the loss of productive agricultural land
- o would not require improvements to Dickenson Road

Disadvantages

- o high cost of servicing
- o impact on 125 existing residential properties, the most of any alternative
- o requires significant changes to both the Hamilton-Wentworth and proposed Glanbrook Official Plans
- o development potential of approximately 30 hectares significantly restricted by Ministry of Transport airport zoning.

Alternative 2

Advantages

- o similar to designation originally proposed in the Hamilton-Wentworth Plan
- o compatible with proposed Glanbrook Official Plan
- o lowest average servicing cost per hectare
- o good opportunity for airport-related commercial development along the west side of Highway 6

Disadvantages

- o largest amount of agricultural land removed from production (265 hectares)
- o over 100 residential properties affected
- o very limited potential for airport-related industrial development with direct internal road access to the airport
- o would adversely affect development of other Industrial-Business Parks, or remain largely vacant for an extended period
- o high total cost of servicing
- o development potential of approximately 18 hectares significantly restricted by Ministry of Transport airport zoning

Alternative 3

Advantages

- o generally compatible with the proposed Glanbrook Official Plan
- o would accelerate development of Mount Hope for the uses contemplated in the proposed Glanbrook Official Plan

- o good opportunity for airport-related commercial development along the west side of Highway 6
- o good opportunity for airport-related industrial development with direct internal road access to the airport (northwest quadrant of Mount Hope)

Disadvantages

- o over 150 hectares of agricultural land removed from production
- o over 100 residential properties affected
- o high total cost of servicing
- o would require significant changes to the Hamilton-Wentworth Official Plan to permit fully serviced development in Mount Hope
- o development potential of approximately 18 hectares significantly restricted by Ministry of Transport airport zoning.

Alternative 4

Advantages

- o only alternative that provides industrial development with direct internal road access to the potential northern terminal
- o fewest residential properties affected (53)
- o lowest total servicing cost
- o smallest amount of land removed from agricultural production (95 hectares)

Disadvantages

- o depends on the northern terminal, which may not be built for a long time
- o possible development pressure on agricultural land in Ancaster
- o opposed by Ministry of Transport staff until long term plans for airport clarified
- o less potential for airport-related commercial development
- o requires major changes in Hamilton-Wentworth and proposed Glanbrook Official Plans.

SECTION 5
CONCLUSION:
THE RECOMMENDED LOCATION

None of the four alternatives evaluated in the previous section appears completely satisfactory, when all of the important advantages and disadvantages are considered.

The context in which planning for the Airport Industrial-Business Park must be carried out has several salient features:

- o a decision from the Ontario Municipal Board requiring Hamilton-Wentworth to consider alternatives to the location originally proposed.
- o the combined effect of the airport expansion project and deregulation, which suggests that air traffic at Hamilton Civic Airport may increase.
- o the uncertainty about how large the increase in air traffic will be.
- o the development of part of the Upper James corridor in the City of Hamilton for commercial use, which will somewhat reduce the potential for airport-related commercial development in the Airport Industrial-Business Park.
- o Transport Canada's potential plan for on-site airport-related industrial development.
- o the mixed findings of the analysis concerning the importance of locations adjacent to the airport that do not have either direct internal road access or taxiway access.
- o the large inventory of vacant developable land in other Industrial-Business Parks within a 30 minute drive of the airport.
- o the high cost of servicing.
- o the importance attached to preserving productive agricultural land by the Province.

These considerations imply that an incremental approach to the development of the Airport Industrial-Business Park would be most appropriate and that industrial and commercial development in the Park should be airport-related. Such an approach would involve developing the park gradually, in an attempt to minimize the risk of undesirable side effects to the Region.

Map 19 illustrates a compromise that focuses on both of these concerns and reflects the planning context. It essentially integrates Alternatives 1 and 4, and introduces a form of phasing policy.

Phase 1 consists of 83 hectares on the west side of Highway 6 from the southerly limit of the Mountain Transit Centre property north to the Ontario Hydro corridor bordering the City of Hamilton. Since sanitary and water services are expected to be available by the end of 1984, this area could be developed almost immediately. Its prominent highway exposure makes it well-suited for airport-related commercial uses,

although some airport-related industrial development is also likely to take place. Phase 1 involves minimal risk, since servicing expenditures are already committed. Relatively little agricultural land would be removed from production.

Phase 2 is a southerly extension of Phase 1, consisting of 43 hectares on the west side of Highway 6 between the Mountain Transit Centre property and the golf course. This area may attract both airport-related commercial and industrial development. Services can be extended to Phase 2 without a new pumping station. It provides an opportunity to begin to develop an internal road system south of the Mountain Transit Centre. The necessary hard services could be installed along this internal road system to minimize pressure for development on good agricultural land east of Highway 6.

Phases 1 and 2 represent a logical extension of development from the City of Hamilton. However, given the large amount of vacant developable land in other Industrial-Business Parks, most of the airport-oriented growth industries that locate in Phases 1 and 2 of the Airport Industrial-Business Park are likely to do so at the expense of development in other areas that are also attractive to such industries. The best opportunity to differentiate the Airport Industrial-Business Park from the Region's other Industrial-Business Parks is to include land suitable for industries that prefer direct access to airport facilities from an internal road.

Two areas that could accommodate this type of development are shown as Potential Phase 3 on Map 19. The northwest quadrant of Mount Hope could provide direct internal road access to the new expanded terminal and associated facilities. Alternative 4 could provide direct internal road access to the proposed northern terminal. If and when the northern terminal is built, two such industrial areas might be desirable, in view of Transport Canada's desire to achieve a separation of general and commercial aviation activities in the long run. One could accommodate industrial uses that prefer access to commercial aviation facilities, including cargo-handling (at the north end), and one could accommodate industries that prefer access to general aviation facilities (at the south end).

However, the complex uncertainties associated with development of the airport mean that the potential demand and timing for either or both the Phase 3 areas cannot be predicted now. These uncertainties include the future growth in air traffic at Hamilton Civic Airport, the development and degree of success of Transport Canada's proposed on-site industrial park, and whether the northern terminal will be built. Furthermore, development of these areas in the near future would require relatively high risk multi-million dollar investments in servicing by the Region with uncertain prospects for development. Designation of Alternative 4 as part of the Airport Industrial-Business Park would also create development pressure on productive agricultural land and reduce Transport Canada's scope for planning the northern terminal.

As a result of these considerations, the immediate designation of either the Potential Phase 3 areas as part of the Airport Industrial-Business Park would not lead to optimal economic development of the Region. Neither of the areas is needed for Hamilton-Wentworth to appropriate the economic benefits available from airport expansion in the next few years. They could also lead to premature commitment of capital expenditures without accompanying development, or adversely affect the development of other industrial areas.

On the other hand, if the Potential Phase 3 areas are not designated in the relevant Official Plans, then it is possible that development adversely affecting their potential for airport-related industrial uses could occur (e.g., residential severances). It therefore would be appropriate to recognize these areas as Special Policy Areas in the Hamilton-Wentworth and Glanbrook Official Plans, and incorporate policies in the Plans to ensure that the Potential Phase 3 areas will remain available for airport-related industrial development.

A decision on the future development of these areas could therefore be deferred without affecting long term economic development of the Region, until the key uncertainties affecting the potential for development are adequately resolved. This approach would also have the advantage of allowing Hamilton-Wentworth to negotiate a cost-sharing agreement with Transport Canada for the extension of services to the airport and related industrial development. In the meantime, Hamilton-Wentworth could support efforts to increase air traffic and clarify future development plans for the airport.

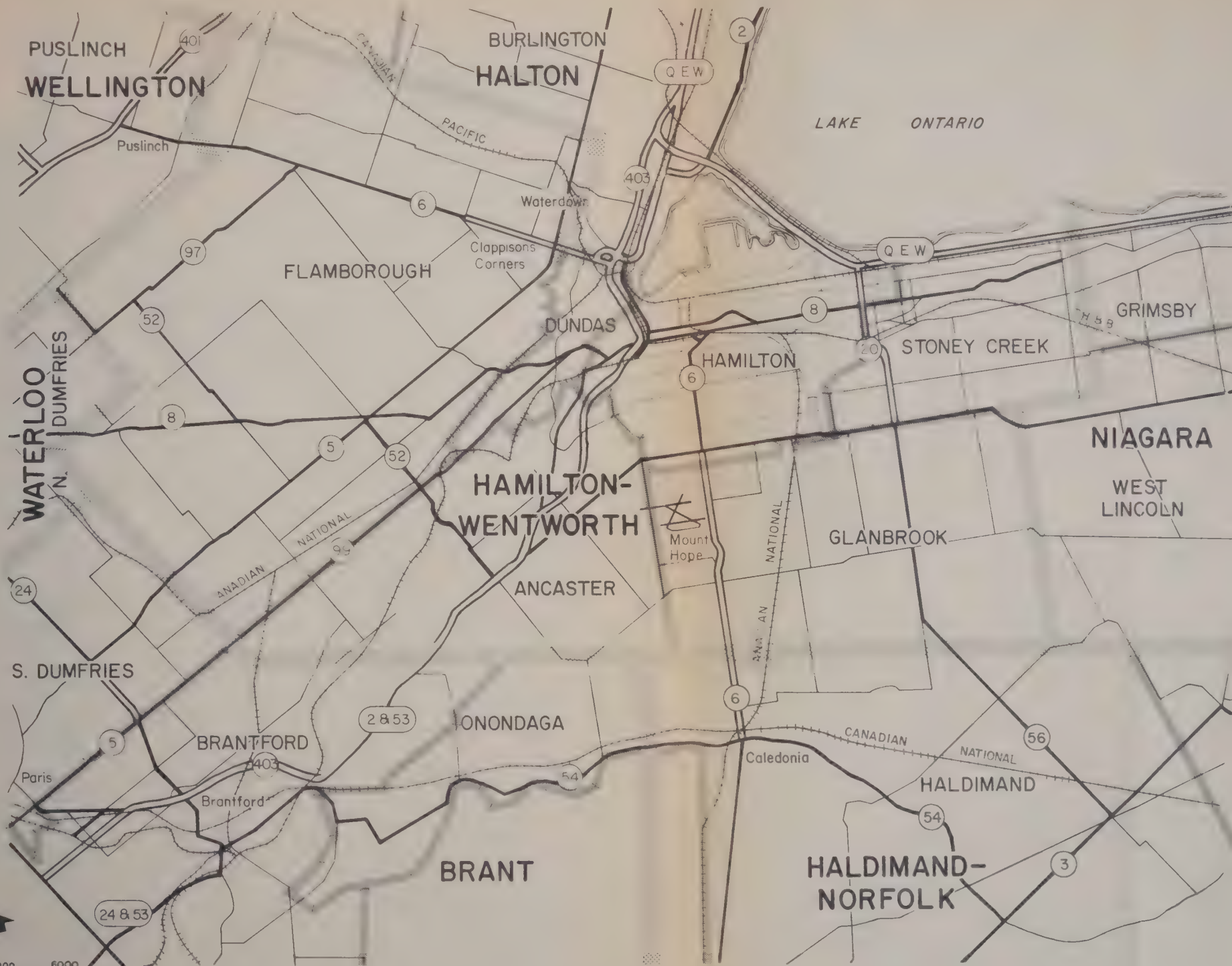
SECTION 6

RECOMMENDATIONS







RECOMMENDATIONS OF THE AIRPORT-INDUSTRIAL BUSINESS PARK LOCATION STUDY

1. That the area along the west side of Highway 6 shown on Map 19 in this report as Phases 1 and 2 be designated as an Industrial-Business Park in the Hamilton-Wentworth Official Plan.
2. That the Airport Industrial-Business Park be developed in two phases as shown on Map 19.
3. That Phase 1 of the Airport Industrial-Business Park be developed as soon as a development plan for both phases of the Park has been adopted by the Council of the Township of Glanbrook.
4. That the timing of development in Phase 2 of the Airport Industrial-Business Park south of the Mountain Transit Centre property be based on the feasibility of the extension of the necessary water and sewer services.
5. That the Township of Glanbrook prepare a detailed development plan for the Airport Industrial-Business Park that contains provisions for an internal road system, limited access to Highway 6 in accordance with the applicable policies of the Ministry of Transportation and Communications, and measures to protect residential and institutional uses in or abutting the Industrial-Business Park.
6. That the areas shown as Potential Phase 3 on Map 19 be considered as an addition to the Airport Industrial-Business Park in the future when more information about the potential construction of the northern terminal and the need for additional land in the vicinity of the airport to accommodate airport-related industrial and commercial uses is available.
7. That the Potential Phase 3 areas shown on Map 19 be designated as Special Policy Areas in the Hamilton-Wentworth and Glanbrook Official Plans, and that both Plans contain policies ensuring that any new development or redevelopment will not preclude future designation of these areas as part of the Airport Industrial-Business Park.
8. That if Council decides to expand the Airport Industrial-Business Park in the future, sanitary and water servicing of either of the Potential Phase 3 areas be staged in conjunction with sanitary sewer servicing of the airport, and that the Region negotiate cost-sharing arrangements with Transport Canada for the extension of services from Phase 2 of the Airport Industrial-Business Park to the Airport property at the appropriate time.
9. That the area north of Dickenson Road deferred by the Ontario Municipal Board and not included in the revised Airport Industrial-Business Park shown on Map 19 be designated as Rural Area in the Hamilton-Wentworth Official Plan.
10. That the Hamilton-Wentworth and Glanbrook Official Plans contain provisions to ensure that development in the Airport Industrial-Business Park is airport-related and that these policies be implemented by means of the Township of Glanbrook zoning by-law.

11. That Hamilton-Wentworth provide marketing support to airport management and Transport Canada as needed to promote industrial development on the airport site.
12. That Hamilton-Wentworth continue representations to the Ministry of Transportation and Communications concerning the need for construction of the Highway 6 Nanticoke Corridor to improve access to Hamilton Civic Airport.



LEGEND

-  MULTILANE HIGHWAYS
-  KING'S HIGHWAY
-  REGIONAL ROADS
-  REGIONAL BOUNDARY
-  MUNICIPAL BOUNDARY
-  AIRPORT LOCATION

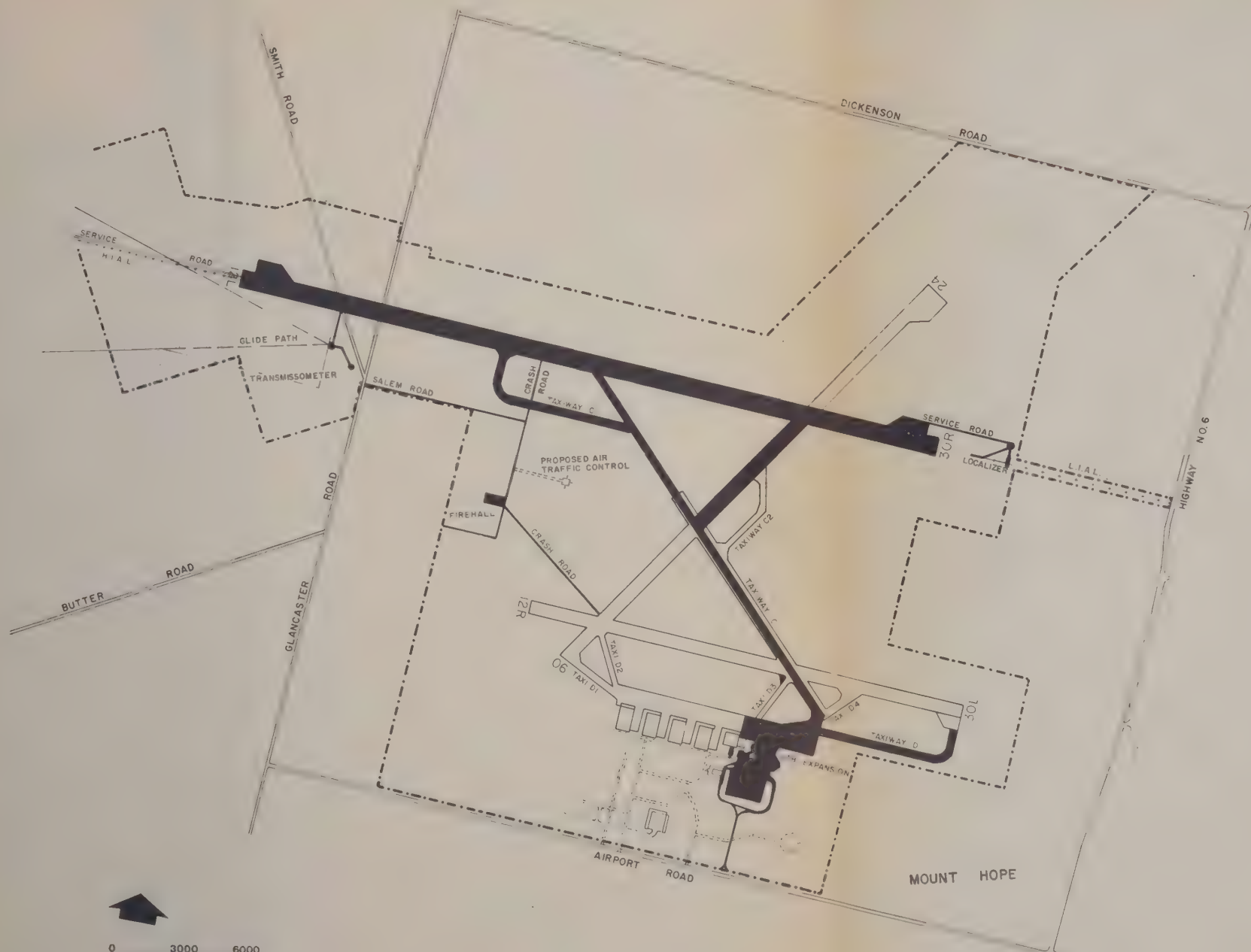
0 3000 6000
Scale in metres

September 1984

Map 2 Location Map

Airport Industrial Business Park
Location Study

Planning and Development Department
Hamilton-Wentworth Region

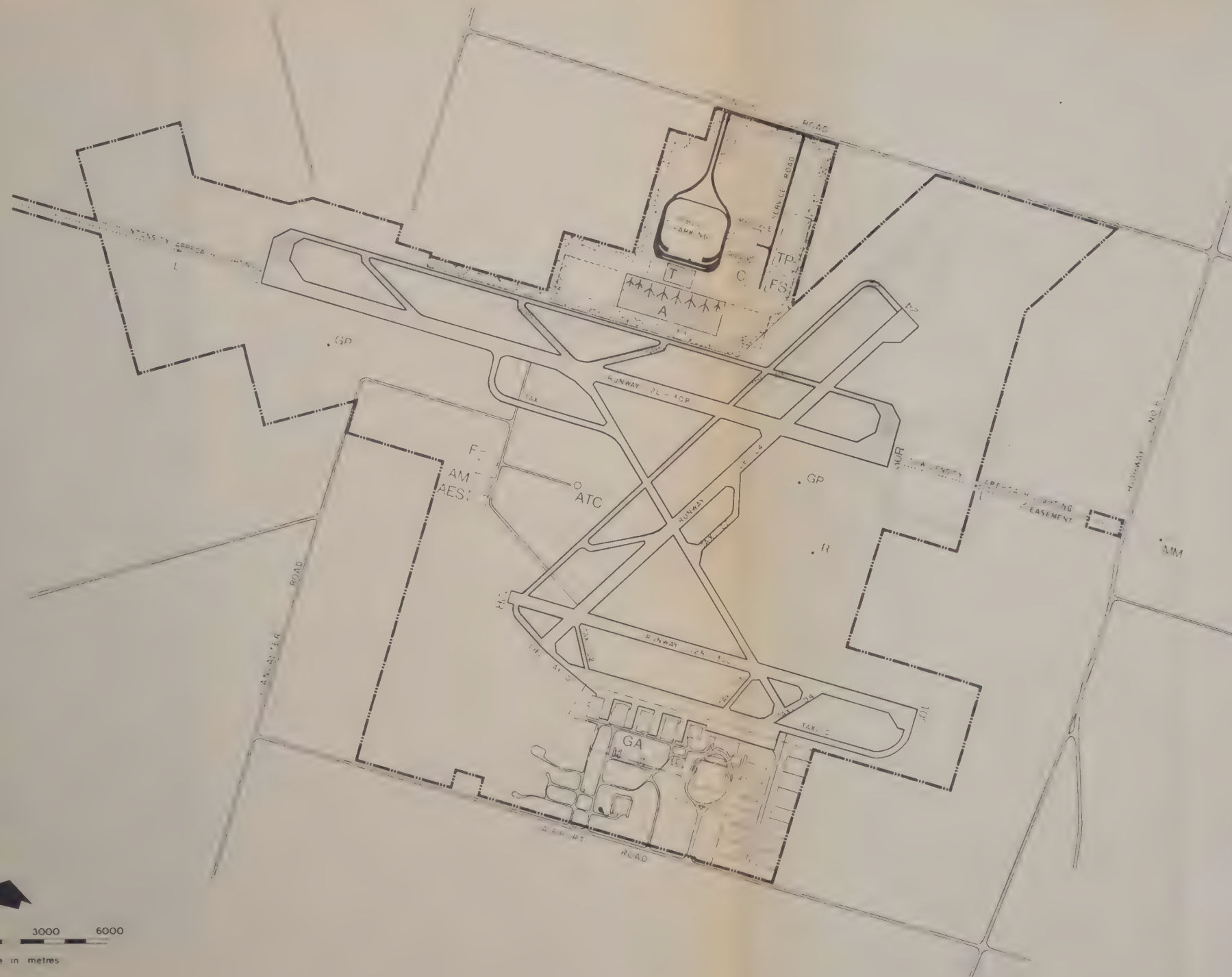


September 1984

- LEGEND
- AIRPORT BOUNDARY
 - AIRPORT EXPANSION

Source: TRANSPORT CANADA

Map 3
Committed Airport Development
 Airport Industrial Business Park Location Study
 Planning and Development Department
 Hamilton-Wentworth Region



LEGEND

- A APRON
- AES AIRPORT EMERGENCY SERVICES
- AM AIRPORT MAINTENANCE
- ATC AIR TRAFFIC CONTROLLER
- C CARGO
- F FIELD ELECTRICAL CENTRE
- FS FUEL STORAGE
- GA GENERAL AVIATION
- GP GLIDE PATH
- L LOCALIZER
- M METEOROLOGICAL FIELD
- MM MIDDLE MARKER
- P PARKING
- R RADAR
- T PASSENGER TERMINAL
- TP THIRD PARTY

- NEW CONSTRUCTION
- NEW LAND
- NEW ROADS
- AIRPORT BOUNDARY
- AIRSIDE ZONING




Map 4 Long Range Airport Expansion

Airport Industrial Business Park
Location Study


Planning and Development Department
Hamilton-Wentworth Region



LEGEND

-  EXISTING AIRPORT ACCESS ROUTES
-  PLANNED AIRPORT ACCESS ROUTE
-  PLANNED INTERSECTION IMPROVEMENTS / INTERCHANGE

LONG TERM IMPROVEMENTS

-  ROADS
-  PROTECTED CORRIDOR

Map 5

Airport Access Routes

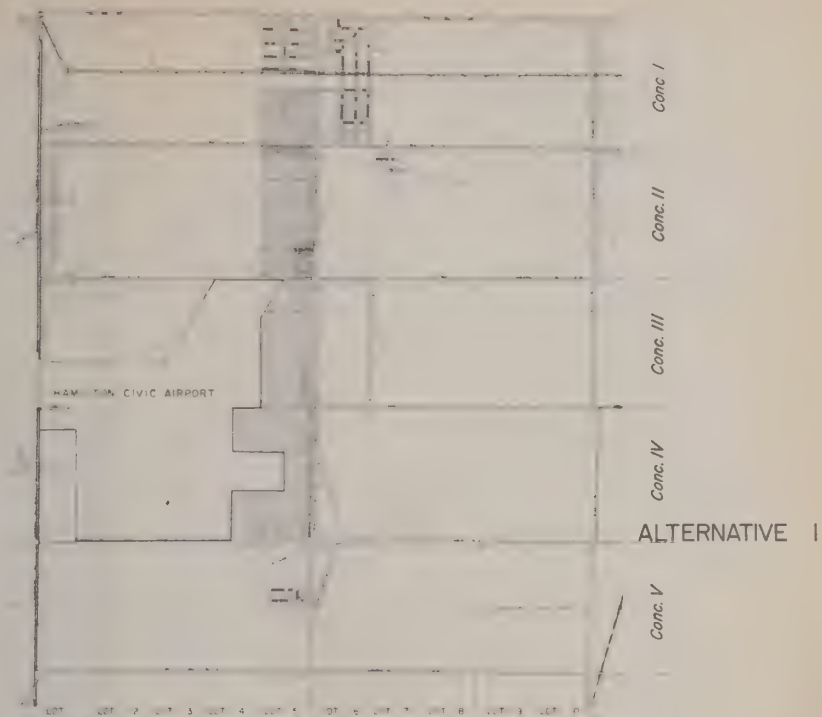
Airport Industrial Business Park
Location Study

Planning and Development Department
Hamilton-Wentworth Region

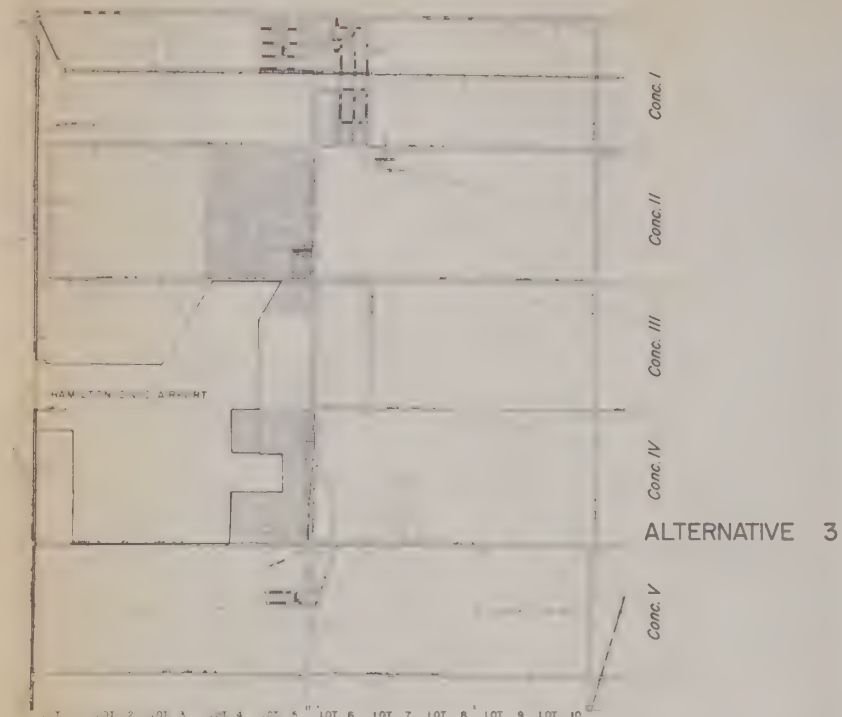
2000 0 2000 4000 6000

Scale in metres

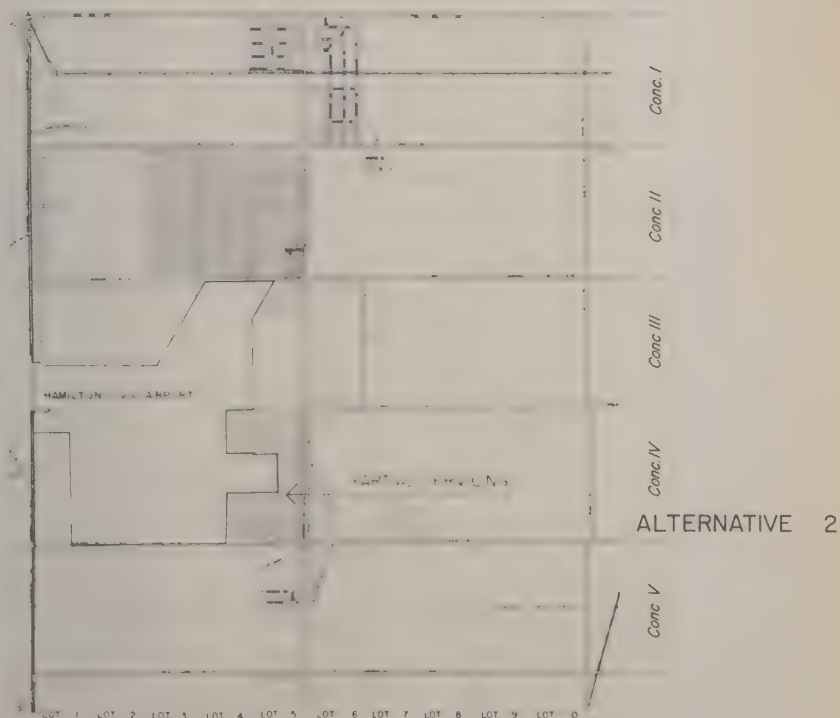
September 1984



ALTERNATIVE 1



ALTERNATIVE 3



ALTERNATIVE 2



ALTERNATIVE 4

LEGEND

ALTERNATIVE
DEVELOPMENT
CONCEPT

500 0 500
 Scale in metres
 September 1994

Map 6
 Alternative Development
 Concepts

Airport Industrial Business Park
 Location Study

Planning and Development Department
 Hamilton-Wentworth Region



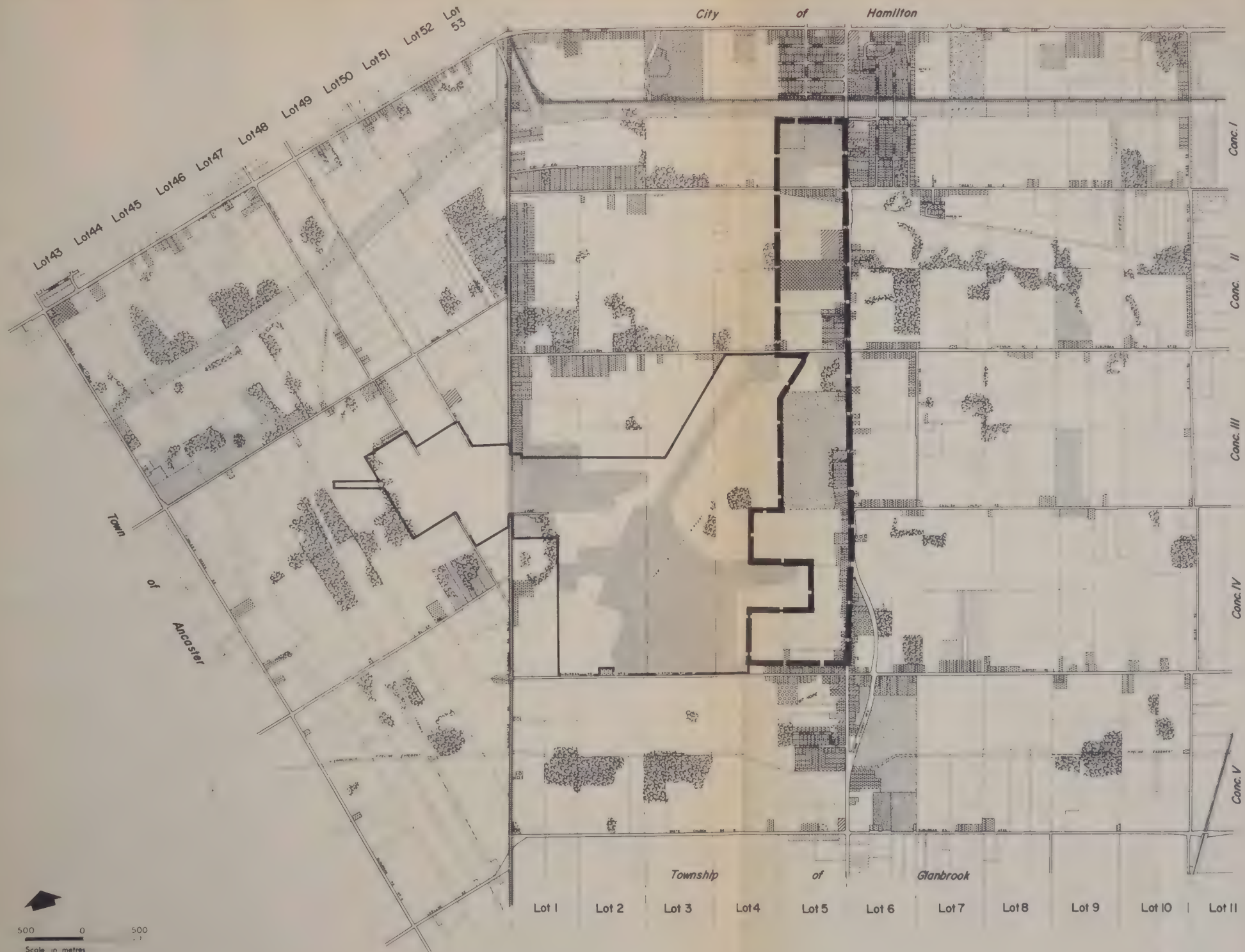
- LEGEND
- RESIDENTIAL
 - COMMERCIAL
 - LIGHT INDUSTRIAL
 - INSTITUTIONAL
 - GOLF COURSE
 - CEMETERY
 - AGRICULTURE
 - AIRPORT
 - WOODLOTS
 - UTILITIES
 - VACANT LANDS
 - AIRPORT BOUNDARY
 - MUNICIPAL BOUNDARY

500 0 500
Scale in metres
September 1984

Map 7
Existing Land Use and
Property Fabric

Airport Industrial Business Park
Location Study

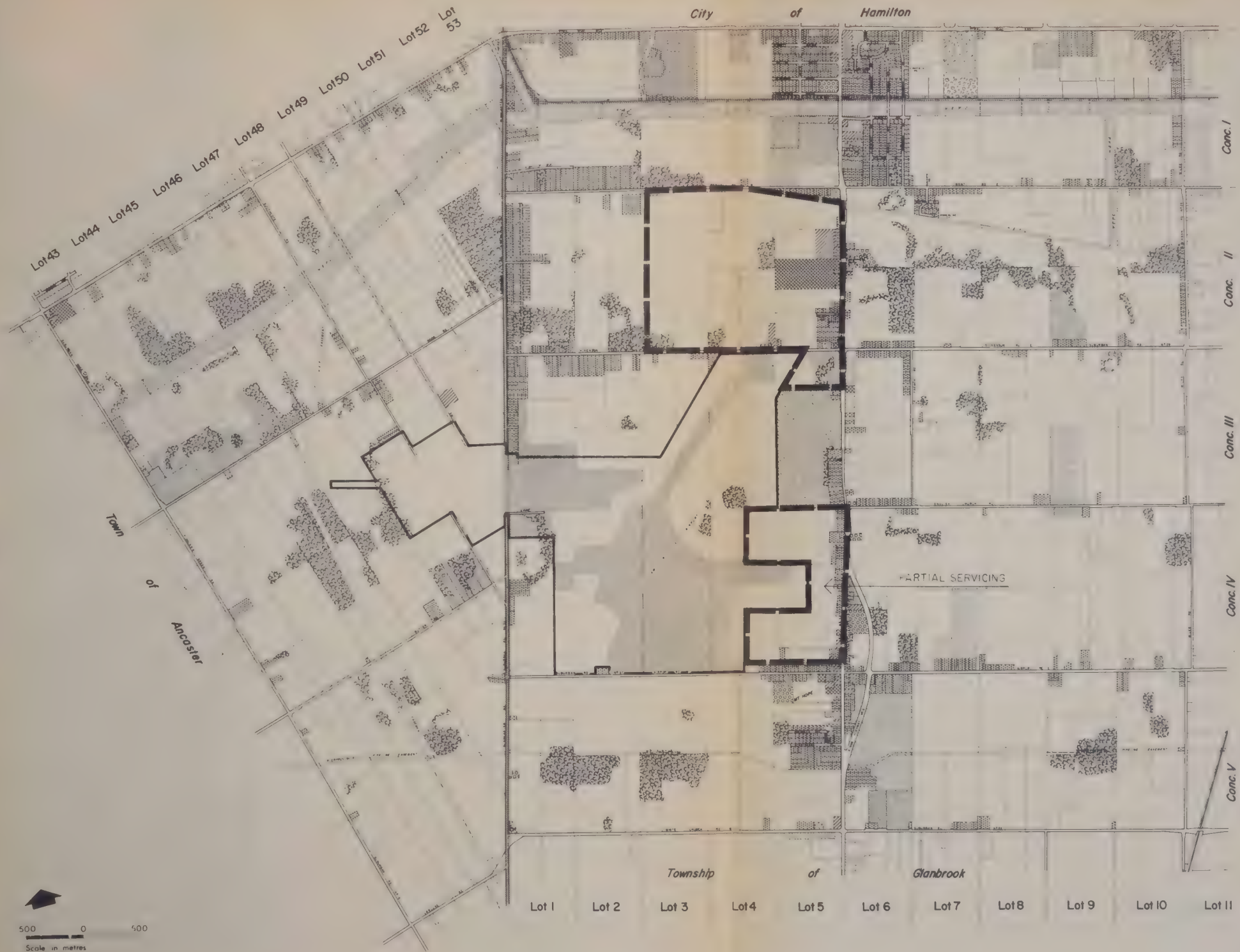
Planning and Development Department
Hamilton-Wentworth Region



Map 8
Alternative I

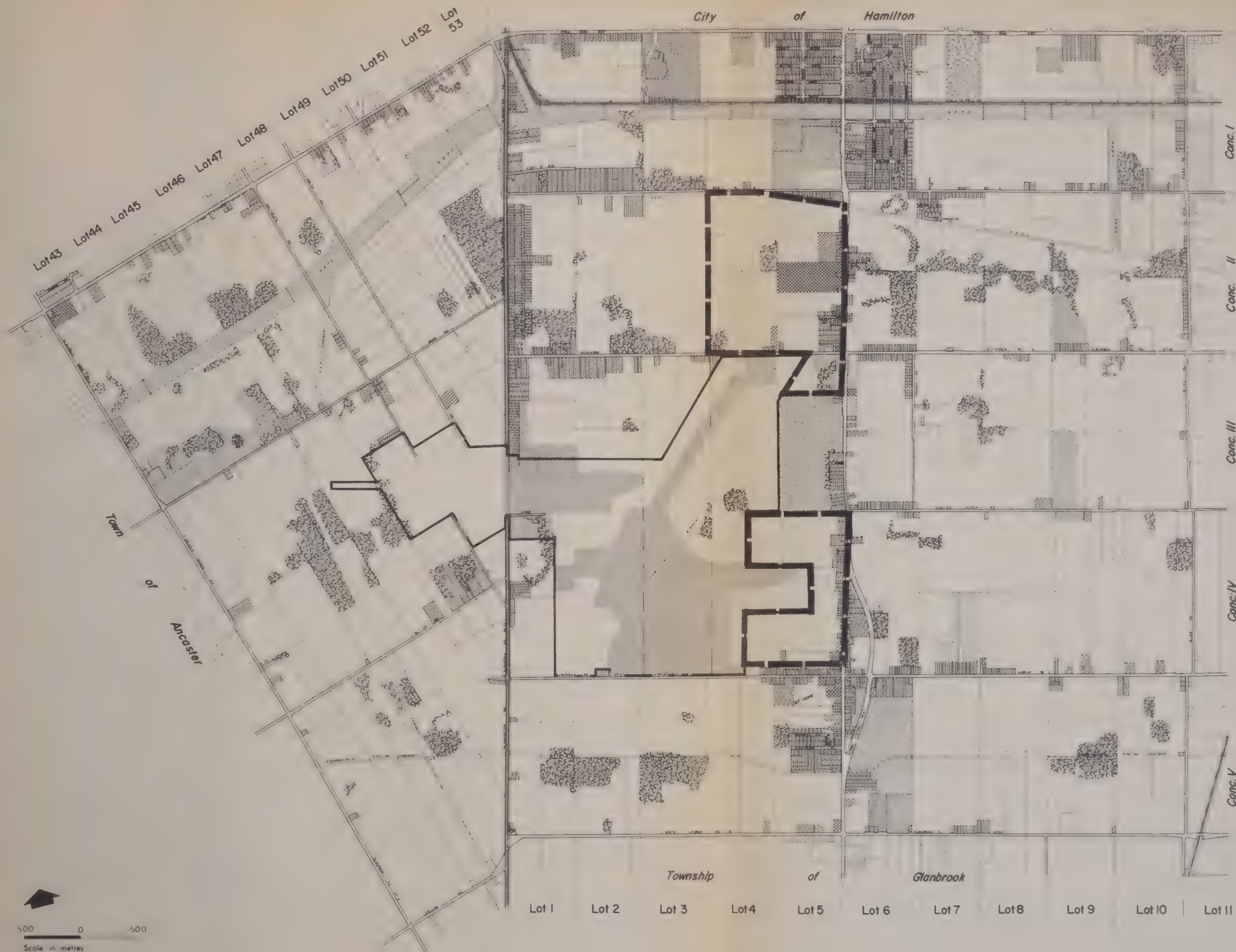
Airport Industrial Business Park
Location Study

Planning and Development Department
Hamilton-Wentworth Region

















- LEGEND**
- EXISTING LAND USE**
- RESIDENTIAL
 - COMMERCIAL
 - LIGHT INDUSTRIAL
 - INSTITUTIONAL
 - GOLF COURSE
 - CEMETERY
 - AGRICULTURE
 - AIRPORT
 - WOODLOTS
 - UTILITIES
 - VACANT LANDS
 - AIRPORT BOUNDARY
 - MUNICIPAL BOUNDARY
 - ALTERNATIVE 2

Map 9
Alternative 2
Airport Industrial Business Park
Location Study



LEGEND

EXISTING LAND USE

-  RESIDENTIAL
-  COMMERCIAL
-  LIGHT INDUSTRIAL
-  INSTITUTIONAL
-  GOLF COURSE
-  CEMETERY
-  AGRICULTURE
-  AIRPORT
-  WOODLOTS
-  UTILITIES
-  VACANT LANDS
-  AIRPORT BOUNDARY
-  MUNICIPAL BOUNDARY
-  ALTERNATIVE 3

Map 10

Alternative 3

Airport Industrial Business Park
Location Study

Planning and Development Department
Hamilton-Wentworth Region



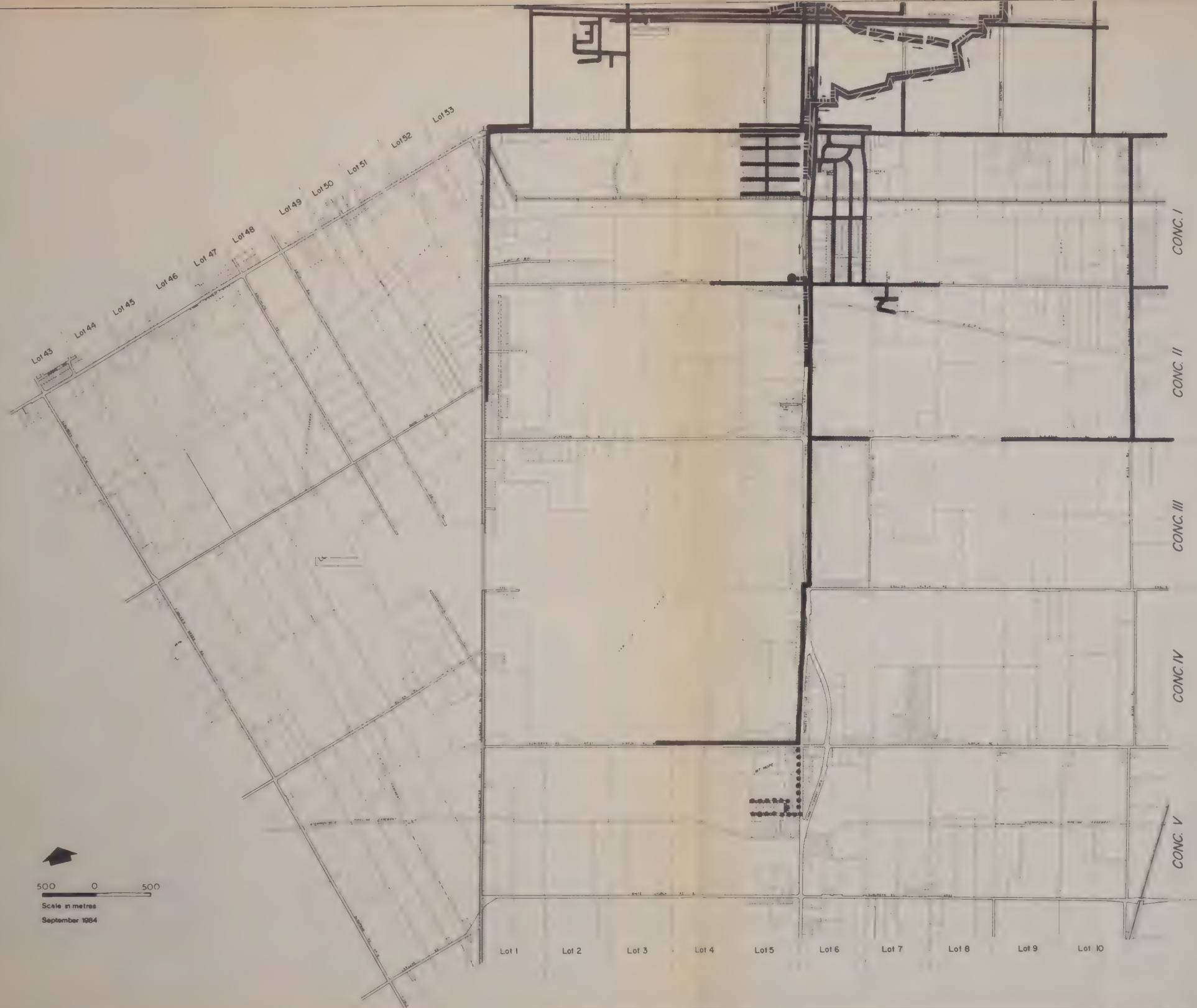
- LEGEND
- EXISTING LAND USE
- RESIDENTIAL
 - COMMERCIAL
 - LIGHT INDUSTRIAL
 - INSTITUTIONAL
 - GOLF COURSE
 - CEMETERY
 - AGRICULTURE
 - AIRPORT
 - WOODLOTS
 - UTILITIES
 - VACANT LANDS
 - AIRPORT BOUNDARY
 - MUNICIPAL BOUNDARY
 - ALTERNATIVE 4**

500 0 500
Scale in metres
September 1984

Map 11
Alternative 4

Airport Industrial Business Park
Location Study

Planning and Development Department
Hamilton-Wentworth Region



LEGEND

- EXISTING SANITARY SEWER (250mm to 700mm)
- EXISTING SANITARY SEWER (750mm and over)
- EXISTING SANITARY SEWER (300mm forceman)
- COMMITTED SANITARY SEWER
- EXISTING STORM SEWER (250mm to 700mm)
- EXISTING STORM SEWER (750mm and over)
- COMMITTED STORM SEWER
- SEWER PUMPING STATION
- SEWAGE FLOW DIRECTION
- EXISTING WATERMAIN
- COMMITTED WATERMAIN
- MUNICIPAL BOUNDARY

SOURCE: REGIONAL ENGINEERING DEPARTMENT

Map 12
Existing and Committed
Services

Airport Industrial Business Park
Location Study

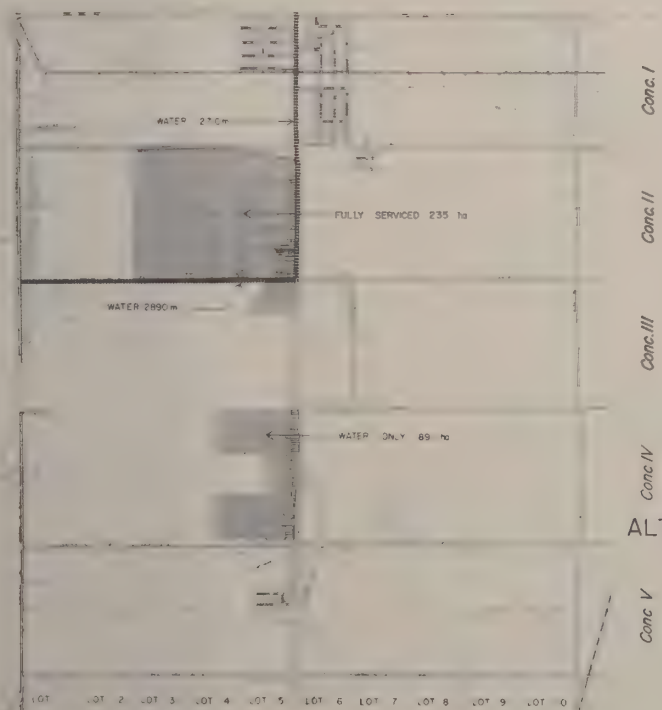
Planning and Development Department
Hamilton-Wentworth Region



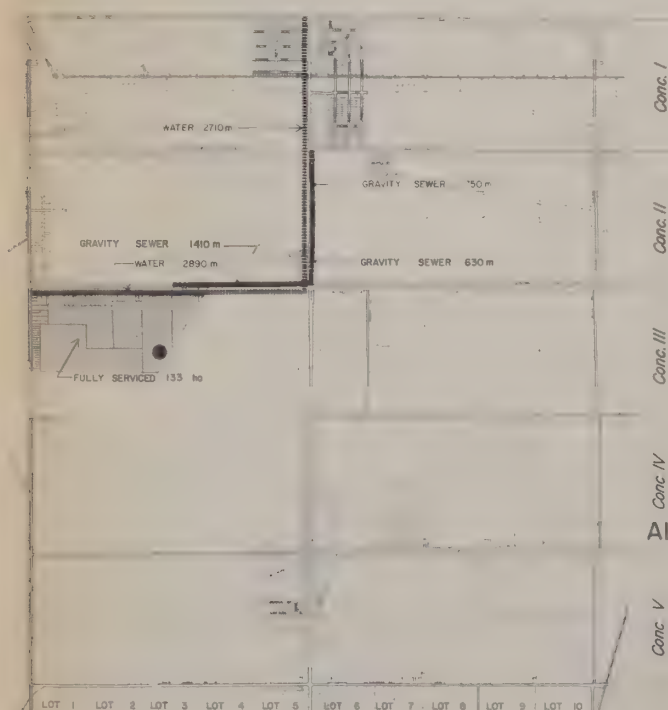
ALTERNATIVE 1



ALTERNATIVE 3



ALTERNATIVE 2



ALTERNATIVE 4

LEGEND

- PROPOSED GRAVITY SEWERS
- PROPOSED FORCEMAIN
- PROPOSED WATER MAIN
- PROPOSED SEWAGE PUMPING STATIONS
- ALTERNATIVE DEVELOPMENT CONCEPTS



LEGEND

RESIDENTIAL AREA

Class

- 1 SOILS HAVE NO SIGNIFICANT LIMITATIONS IN USE FOR CROPS.
- 2 SOILS HAVE MODERATE LIMITATIONS THAT RESTRICT THE RANGE OF CROPS OR REQUIRE MODERATE CONSERVATION PRACTICES
- 3 SOILS HAVE MODERATELY SEVERE LIMITATIONS THAT RESTRICT THE RANGE OF CROPS OR REQUIRE SPECIAL CONSERVATION PRACTICES

Subclass

- S SOIL LIMITATIONS
T ADVERSE TOPOGRAPHY
W EXCESS WATER

Example

1⁶3⁴_T AN AREA OF CLASS 1 AND AN AREA OF CLASS 3 WITH ADVERSE TOPOGRAPHY IN PROPORTIONS OF 6:4.

SOURCE: CANADA LAND INVENTORY SOIL CAPABILITY FOR AGRICULTURE.

0 3000 6000

Scale in metres

September 1984

Map 14 Agricultural Capability

Airport Industrial Business Park
Location Study

Planning and Development Department
Hamilton-Wentworth Region



LEGEND

FIELD CROP SYSTEMS

- P CONTINUOUS ROW CROP
- C CORN SYSTEM
- M MIXED SYSTEM
- MG GRAIN SYSTEM
- H HAY SYSTEM
- HG PASTURE SYSTEM
- G GRAZING SYSTEM

SPECIALTY AGRICULTURE

- KF EXTENSIVE FIELD VEGETABLES
- KN NURSERY
- OR ORCHARD

NON-SYSTEM LAND USE

- A1 IDLE AGRICULTURAL LAND(5-10 yrs)
- A2 IDLE AGRICULTURAL LAND(over 10 yrs)
- Z WOODLAND
- B BUILT UP
- T SOD FARMS
- R RECREATION
- MUNICIPAL BOUNDARY

SOURCE:

ONTARIO MINISTRY OF AGRICULTURE
AND FOOD
AGRICULTURAL LAND USE SYSTEMS MAP
JANUARY, 1983

Map 15 Existing Agricultural Systems

Airport Industrial Business Park Location Study

Planning and Development Department
Hamilton-Wentworth Region



- LEGEND
- RURAL AREA
- RURAL
- RURAL SETTLEMENT AREA
- URBAN AREA
- URBAN INDUSTRIAL-BUSINESS PARK
- HIGHWAY COMMERCIAL
- OPEN SPACE AND RECREATION
- HAZARD LANDS
- RESIDENTIAL
- INSTITUTIONAL
- COMMERCIAL
- UTILITIES
- MUNICIPAL BOUNDARY

SOURCE:
 ANCASTER, GLANBROOK, AND
 HAMILTON OFFICIAL PLANS

500 0 500
 Scale in metres
 September 1984

Map 16
Planning Designations
 Approved - Ancaster, Hamilton
 Proposed - Glanbrook

**Airport Industrial Business Park
 Location Study**

Planning and Development Department
 Hamilton-Wentworth Region

City of Hamilton

LEGEND

- INTERMITTENT WATERCOURSE
- PERMANENT WATERCOURSE
- FLOOD PLAIN

SOURCE: FLOOD PLAIN BY
GRAND RIVER CONSERVATION AUTHORITY,
HAMILTON REGION CONSERVATION AUTHORITY,
AND NIAGARA PENINSULA CONSERVATION
AUTHORITY

Map 17
Hazard Lands and
Watercourses

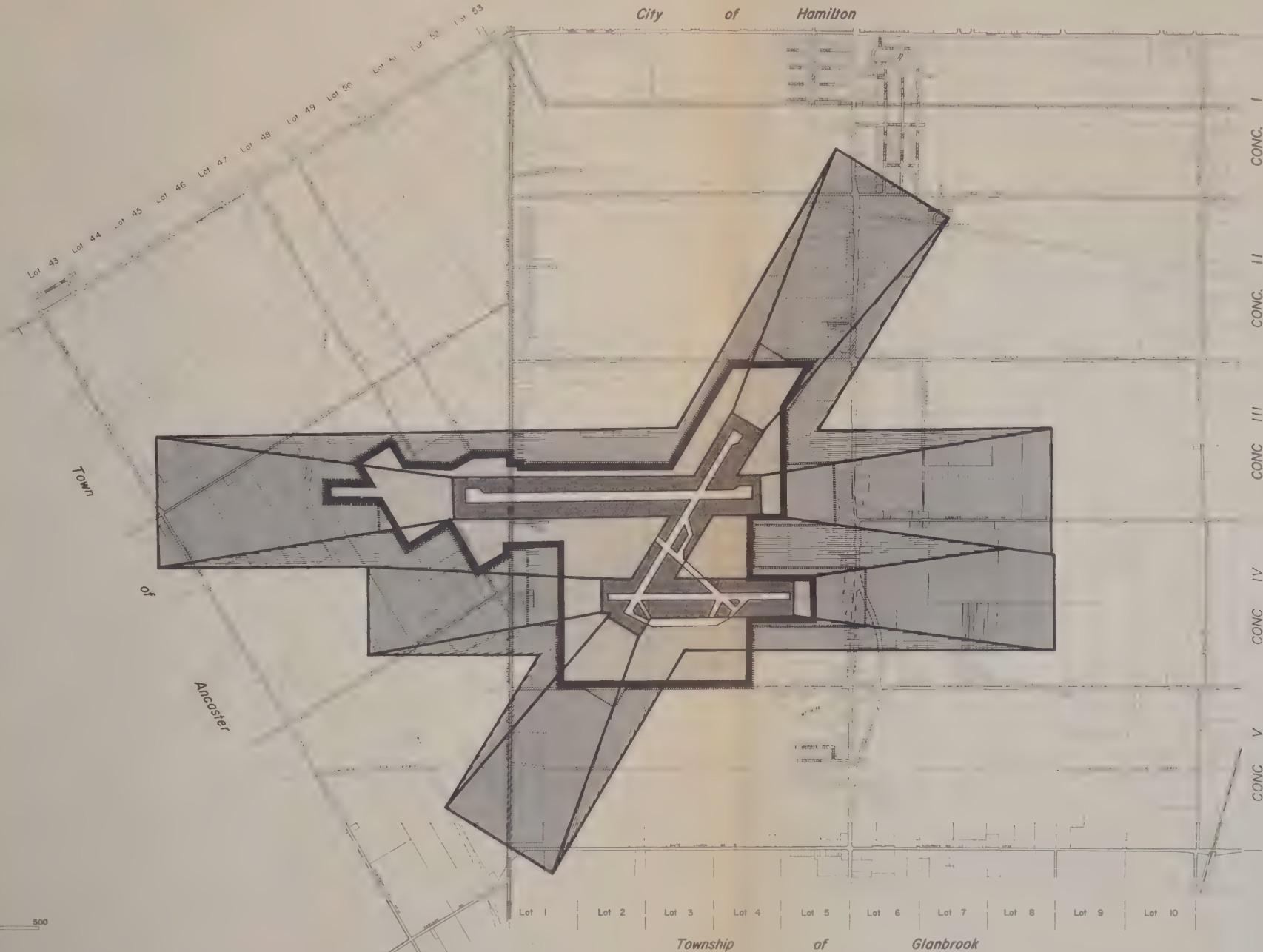
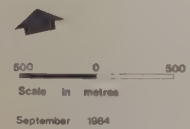
Airport Industrial Business Park
Location Study

Planning and Development Department
Hamilton-Wentworth Region

500 0 500
Scale in metres
September 1984

Township of Glanbrook

Town of Ancaster



LEGEND

- APPROACH SURFACE
- TRANSITIONAL SURFACE
- STRIP
- AIRPORT AREA
- OUTER SURFACE
- AIRPORT BOUNDARY
- MUNICIPAL BOUNDARY
- APPROXIMATE LIMIT OF 10m. BUILDING HEIGHT

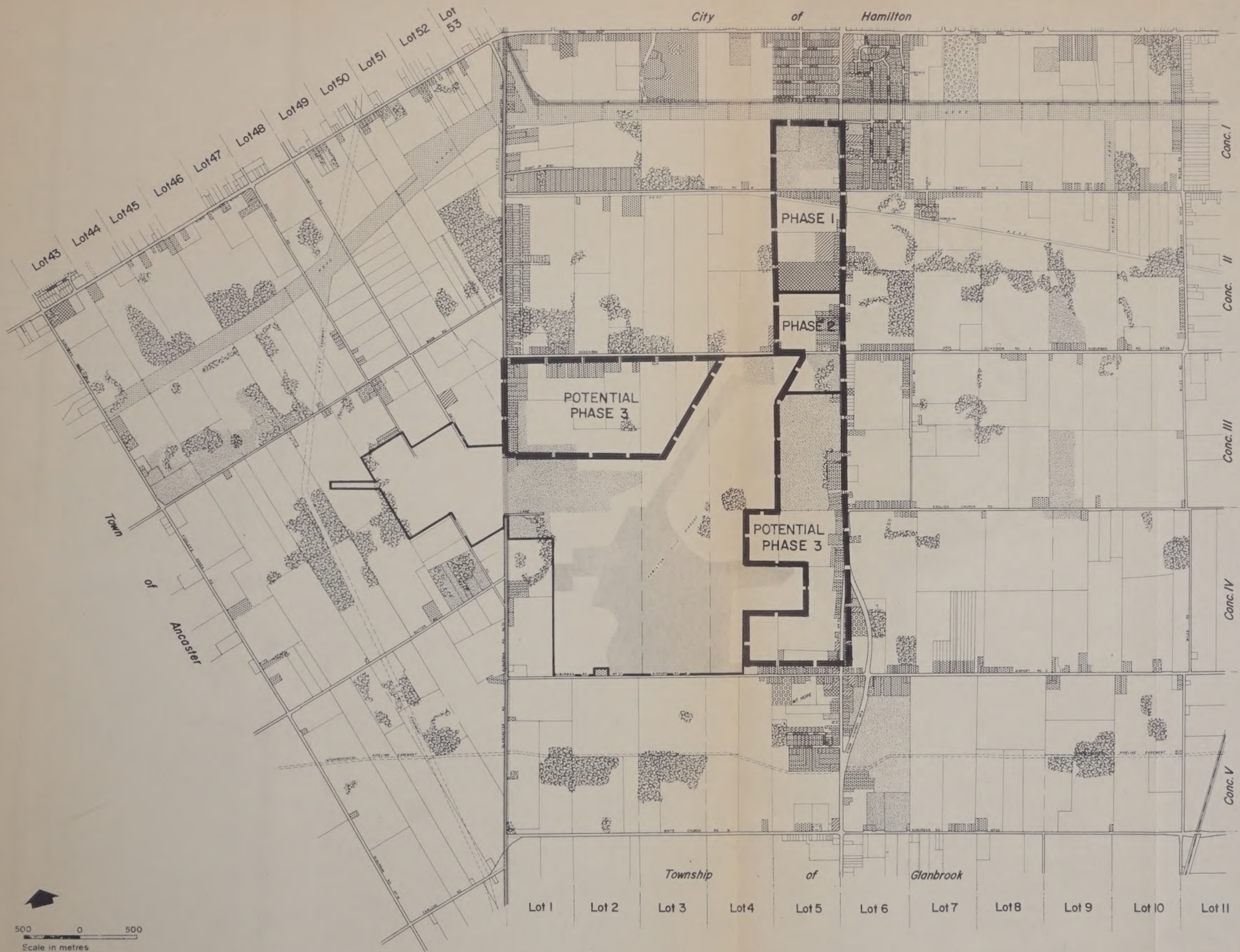
SOURCE: TRANSPORT CANADA
10 m line estimated by Planning and Development Department

Map 18

Airport Zoning

Airport Industrial Business Park Location Study

Planning and Development Department
Hamilton-Wentworth Region



LEGEND

EXISTING LAND USE

- RESIDENTIAL
- COMMERCIAL
- LIGHT INDUSTRIAL
- INSTITUTIONAL
- GOLF COURSE
- CEMETERY
- AGRICULTURE
- AIRPORT
- WOODLOTS
- UTILITIES
- VACANT LANDS
- AIRPORT BOUNDARY
- MUNICIPAL BOUNDARY
- RECOMMENDED DEVELOPMENT CONCEPT

Map 19

Recommended Development Concept

Airport Industrial Business Park Location Study

Planning and Development Department
Hamilton-Wentworth Region

